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INDUSTRIAL and POPULATION GROWTH in UTAH

With Special Reference to Agriculture

LOGAN, UTAH
MARCH, 1959

UNITED STATES DEPARTMENT of AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
FARM ECONOMICS RESEARCH DIVISION

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PREFACE

As directed by the President of the United States, the United States Department of Agriculture is cooperating with the U. S. Bureau of Reclamation in a reappraisal of the direct agricultural benefits from participating irrigation projects of the Colorado River Storage Project. The directive from the President stated that it is assumed that "the survey will relate the proposed projects to the general agricultural economy of the Upper Colorado River Basin."

The study reported here is intended to contribute to both the appraisal of direct benefits and an evaluation of impacts of the Colorado River Storage Project on the agricultural economy of the basin. The material is intended to form a framework that will improve projections of prices and agricultural incomes on the respective projects, especially in Utah. It will also serve as a partial basis for a report on the agricultural economy of the entire Upper Colorado River Basin.

A USDA Field Advisory Committee was organized in 1956 with responsibility in the field for this appraisal of benefits. A Field Party located at Salt Lake City, Utah, is immediately responsible for carrying out the surveys on agricultural benefits and reporting to the Field Advisory Committee. This report was prepared by the Farm Economics Research Division, Agricultural Research Service for the Field Advisory Committee.

INDUSTRIAL AND POPULATION GROWTH IN UTAH WITH SPECIAL REFERENCE TO AGRICULTURE

By W. Preston Thomas, Agricultural Economist
Farm Economics Research Division

HIGHLIGHTS

During the last decade and a half, the growth of the Nation has been accompanied by a redistribution of population and supporting industries. Industry and population have shifted markedly to the Western States. During this period, population in these States increased 66 percent compared with a 24 percent increase for the Nation as a whole. In 1955, population in the Western States was 23 million; the projection for 1975 is 39 million. Projections for the State of Utah indicate a growth in population from 797,000 in 1955 to between 1,200,000 and 1,500,000 in 1975.

Utah's basic industries have shifted from predominant reliance on agriculture to industry. Of the total labor force employed in basic industries in 1940, agriculture accounted for 53 percent, manufacturing for 29 percent, and mining for 18 percent. Of the number employed by these industries in 1955, 38 percent were employed in agriculture, 44 percent in manufacturing, and 18 percent in mining. The projections for basic industries for 1975 are that agriculture will employ 24 percent, manufacturing 59 percent, and mining 17 percent.

The present programs of development of the basic resources available in Utah are expected to support a substantial expansion of industry and population. Development of Colorado River Storage and Weber Basin Projects will provide additional water and electric power for agriculture and industry. Location as the trade center in the intermountain area, nearness to Pacific Coast markets, and a greatly expanded population in the Pacific Coast area are favorable to Utah's industrial and population growth.

In 1955, Utah produced about 2 billion pounds of food and consumed about 1.5 billion pounds. If a projected population of 1,500,000 for 1975 is realized, total consumption of food in Utah will be about 3 billion pounds. This is 96 percent above consumption for 1955 and is about 1 billion pounds more than the total production for that year. The estimated consumption of livestock and livestock products by 1975 will exceed 1955 production by 533 million pounds. Food produced primarily for local markets will benefit especially from this new demand. The impact of this new situation will affect the use of agricultural resources, production and marketing programs, and the economy of the State.

The estimated consumption by 1975 of food by the Western States is about 75 billion pounds, or 77 percent above consumption for 1955. The estimated consumption of livestock and livestock products by 1975 exceeds 1955 consumption by 77 percent and 1955 production by about 19 billion pounds. Production of crops used for food is likely to exceed consumption by about 19 billion pounds.

A major source of agricultural income in Utah and the West is from livestock and livestock products. The expanded demands in the West for these products should affect markets, costs, prices, and returns to western producers.

The increase in food requirements in Utah and in the Western States, especially for livestock and livestock products, is likely to change the type of farming and use of agricultural resources in many areas. The trend will be toward greater intensification of agriculture for production of deficit commodities for local and western markets. This will require further development and more efficient management in the use of land and water.

INDUSTRIAL AND POPULATION GROWTH IN UTAH
WITH SPECIAL REFERENCE TO AGRICULTURE

By W. Preston Thomas, Agricultural Economist
Farm Economics Research Division

INTRODUCTION

A redistribution of population and supporting industries accompanied the growth of the Nation from 1940 to 1955. A major shift of industry and population was to the Western States. During this period, population of the West increased by 66 percent, while the change in population of the United States amounted only to 24 percent. Utah's economy which was static in 1940 became strongly active by 1955. The economy not only expanded; it underwent significant changes; it shifted from predominant reliance on agriculture to industry.

Utah has the resources to support further expansion of industry. The State is rich in the raw materials requisite to industrial development. Resource developments should provide water for industrial and agricultural development during the next 20 years. Ample power should be available for industrial and population growth.

Projections made by several agencies indicate a population of about 220,000,000 people in the United States by 1975 and that the population of the West will increase about 70 percent from 1955 to 1975. ^{1/} The anticipated industrial and population growth in Utah and the West will have major impacts on use of agricultural resources, on distribution of farm products, and on the economy of the State.

In response to a letter of March 19, 1954, from the President of the United States to the Secretaries of Agriculture and Interior, the United States Department of Agriculture, in cooperation with the United States Department of the Interior, is making an appraisal of the direct agricultural benefits anticipated from the 11 participating irrigation projects of the Colorado River Storage Project. An appraisal of agricultural benefits and incomes requires projections of demands for farm commodities adaptable to the irrigation areas. The assumption was also made in the directive that the survey would relate impacts of the Colorado River Storage Project to the agricultural economy of the Upper Colorado River Basin.

^{1/} Daly, Rex F. The long-run demand for farm products. Agr. Econ. Res. 8:73-91. July 1956.

Nielson, Howard C. Population trends in the United States through 1975. Stanford Research Institute. 1955.

U. S. Dept. of Agriculture. Statistical data and notes on the long-run demand for farm products. Working data. July 1956. (Mimeographed)

U. S. Bureau of the Census. Current population reports, population estimates. P-25, No. 160. Unpublished estimates prepared by the Census for the U. S. Bureau of Public Roads.

The primary purpose of the study reported was to collect and analyze information for use in appraisal of the direct agricultural benefits of these projects. The important factors are: (1) The future demand for food; (2) the impacts of changes in demand on the agricultural economy; and (3) the adjustments in use of agricultural resources to meet changes in demand for farm products.

This report is concerned primarily with the State of Utah. The intent is that the State report will serve as a partial basis for an overall statement on the agricultural economy of the Upper Colorado River Basin. The analysis should not be viewed as an evaluation of the Colorado River Storage Project. An estimate is made of associated effects on the agricultural economy of the State if electric power, water, and irrigated lands were developed at various rates and under various assumptions of economic conditions in the national economy.

LAND AND WATER

Present Land Use

The total land area of Utah is 52,701,000 acres. Of this total, 2,027,000 acres, or 3.8 percent, are cropland. The irrigated area is only 2.2 percent of the total acreage (table 1). It is estimated that after all of the available water has been developed and used and all of the potential dry cropland has been cultivated, the cropped area will be less than 5 percent of the total land area. The acreage of good land is large enough to expand greatly the irrigated area if water were available. Although only a small part of the land area of the State is irrigated, 77 percent of the agricultural income is derived from irrigated farming. Five percent of the remaining income comes from dry farmland, and 18 percent from rangeland. 2/

Colorado River Basin Development

The Colorado River rises in the Rocky Mountains of Colorado and Wyoming and flows southwest about 1,400 miles into the Gulf of California. Its drainage area originates in 7 States. In the years before diversions were made, the estimated average annual flow of the river was about 17 million acre-feet; the annual flow ranged from 5 million to 25 million acre-feet.

The climate of the Colorado River Basin ranges from year-round snow-covered peaks of the Rockies to desert areas in Arizona and California. Growing seasons range from 60 to 160 days in the mountain areas to year-round in Arizona and California.

2/ Thomas, W. P., et al. Colorado River and Utah's Agriculture. Utah Agr. Expt. Sta. Spec. Rept. No. 1. 1949.

Table 1. Land area and use, Utah

Major land uses	1,000 acres	Percent
Irrigated land <u>1</u> / - - - - -	1,165	2.2
Dry cropland (including summer fallow) - - - - -	862	1.6
Total cropland <u>2</u> / - - - - -	2,027	3.8
Total grazing, forest and other uses - - - - -	50,674	96.2
Grand total land area- - - - -	52,701	100.0

1/ See footnote 2, Thomas, W. P. et al., page 2.

2/ U. S. Bureau of the Census. 1954 Agricultural Census for Utah.

The vast water resources of the river were developed only partially by the early settlers of the area. The costs of facilities for development of water and power on the main stream were beyond local resources. Although a fuller use of the waters of the Colorado River for irrigation had been made by the lower basin States than by the upper basin States, it was not until Hoover Dam was built by the Federal Government that the water and power resources were more fully developed.

Agriculture has been the major industry of the four Upper Colorado River Basin States (Colorado, New Mexico, Utah, and Wyoming). The settlement of this area and utilization of the land and other resources became possible largely through irrigation. This development, however, was made with only partial use of Colorado River water.

Settlement and development of land in the Upper Colorado River Basin began about 1870. During the two following decades, permanent agricultural settlements were established in most habitable parts of the basin. As has been the usual procedure in settlement of arid regions, the first settlements were near streams whose natural flow could be diverted easily to irrigate crops. As the original settlements were expanded, lands less favorably situated were taken up. Settlers often cleared and settled lands that they were forced to abandon later because of inadequate water or the difficulty or cost of conveying it to the land.

Irrigation made it possible for the pioneers to establish homes, communities, and the present economy of the area. Irrigated agriculture has been established largely by private individuals with some participation by the Federal Government. The high cost of the large projects on the Colorado River and the capital limitations of residents of the area, restricted early irrigation development mainly to the valley bottoms. These lands could be more easily irrigated and required less costly facilities for water storage, diversion, and conveyance to the land. As a result of this type of development, some

of the higher and perhaps better lands are not used for crop production, and many presently irrigated areas are without storage facilities for water. Serious deficiencies in annual precipitation, its erratic seasonal characteristics, and fluctuation in the supply of irrigation water have resulted in a hazardous agricultural industry, which in turn has contributed generally to an unstable economy. A stable and adequate water supply would eliminate the chief cause of crop failure and would thus stabilize and increase farm incomes.

Since 1910, the acreage devoted to crop production under irrigation in the Upper Colorado River Basin has remained about the same. By 1910, most of the irrigation projects that could be financed and constructed by individuals and small groups of farmers had been developed. Further development required cooperation of local people, various States, and the Federal Government. Recognizing the vital importance of the waters of the Colorado River to future economic development of the basin, the concerned States, along with the Federal Government, have entered into compacts for the allocation of the water between States, and have encouraged development of the water resources of the river basin.

Colorado River Compacts.— Colorado, New Mexico, Utah, Wyoming, California, Arizona, and Nevada have an immediate interest in the Colorado River. A difference in interpretation between upper and lower basin States of the rights of various States to the river water made it necessary to agree on division of the water. In November 1922, a compact between the lower and the upper States was entered into. This compact was approved by six State Legislatures and the Congress in 1923. Arizona did not approve the compact until 1944. The 1922 compact divides the Colorado River Basin into two basins. The upper basin includes parts of Arizona, Colorado, New Mexico, Utah, and Wyoming (fig. 1). The lower basin includes parts of Arizona, California, Nevada, New Mexico, and Utah. The terms of the compact provide that the upper States cannot cause the Colorado River at Lee's Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of 10 consecutive years. Each of the basins--the upper and lower--was apportioned from the Colorado River system in perpetuity the exclusive beneficial consumptive use of an average of 7,500,000 acre-feet of water per annum.

A compact between the Upper Basin States (Colorado, New Mexico, Utah, Wyoming, and Arizona) was signed on October 11, 1948, for the division of the use of the waters of the Colorado River system apportioned to these States by the Colorado River Compact of 1922. This 1948 compact provides for the division of 7,500,000 acre-feet of water in perpetuity, as qualified under the 1922 Colorado River Compact.

Arizona was allocated a consumptive use of 50,000 acre-feet. The rest of the water available to the Upper Basin States was allocated as follows: Colorado, 51.75 percent; New Mexico, 11.25 percent; Utah, 23.0 percent; and Wyoming, 14.0 percent.

Colorado River Storage Project.— The Colorado River Storage Project was authorized by the Congress in the spring of 1956 and approved by the President on April 11 of the same year. This action initiated a comprehensive development of the water resources of the Upper Colorado River Basin.



The project is a basinwide undertaking with a multipurpose development regulating the streamflow of the river, preventing floods, creating electrical power, and making water available for agriculture, industry, and cities and communities.

The act authorizes construction of four major storage projects for the regulation of streamflow and the generation of hydroelectric power and the development of the 11 irrigation projects. The four major storage projects provided in the act are: Grand Canyon in Arizona and Utah, Flaming Gorge in Utah and Wyoming, Navajo Dam in northern New Mexico, and Curecanti Dam in western Colorado. These four projects in combination will provide a generating capacity of more than a million kilowatts.

Eleven authorized irrigation projects are located as follows: Colorado 5, New Mexico 1, Utah 2, and Wyoming 3. These participating irrigation projects are planned and designed to deliver water to about 132,000 acres of arid, undeveloped land and to provide a supplemental supply for 234,000 acres of land presently irrigated.

The legislation for the Upper Colorado River Basin development sets a maximum appropriation of \$760,000,000. The project will be financed initially by the Federal Government. About 99 percent of the total cost will be repaid by users of water and power, and two-thirds of the total cost will be repaid with interest. 3/ The cost of power and water for cities and other uses is to be repaid in full with interest. Construction costs for irrigation water do not carry an interest charge.

Colorado River Development in Utah

The Central Utah project will develop irrigation water for 28,540 acres of nonirrigated land and a supplemental supply for 131,840 acres, or a total acreage of 160,380 acres (table 2 and fig. 2). The authorization of this project calls for the allocation of 48,800 acre-feet of water for municipal and industrial use. The Emery County project will develop water for 3,630 acres of new land and a supplemental supply for 20,450 acres, or a total acreage of 24,080 acres (table 2). The two projects will add 32,170 acres of new lands and provide a supplemental water supply for 152,290 acres, or a total acreage of 184,460.

Weber Basin Development

When completed the Weber River Basin Reclamation Project will develop practically all of the water in the basin; in so doing, it will double the water supply for the area. 4/ In addition to water development, the low-lying lands in the project near Great Salt Lake will be reclaimed through drainage. The project will cost approximately \$70,000,000.

3/ Upper Colorado River Commission. Colorado River Storage Project. p. 3. 1957.

4/ Weber Basin Water Conservancy District and U. S. Bureau of Reclamation. Weber Basin Federal Reclamation Project. January 1958. (Mimeographed)

Project plans call for an increase in storage capacity by construction of two reservoirs, enlargement of two existing reservoirs, and construction of a large fresh water off-stream reservoir on the shores of Great Salt Lake. The total capacity of the reservoirs will be 445,000 acre-feet of water. The project will provide water to irrigate 50,500 acres of nonirrigated land and 24,388 acres of land now inadequately irrigated, or a total of about 75,000 acres (table 2). Drainage will be provided for 19,000 acres of land with a high water table.

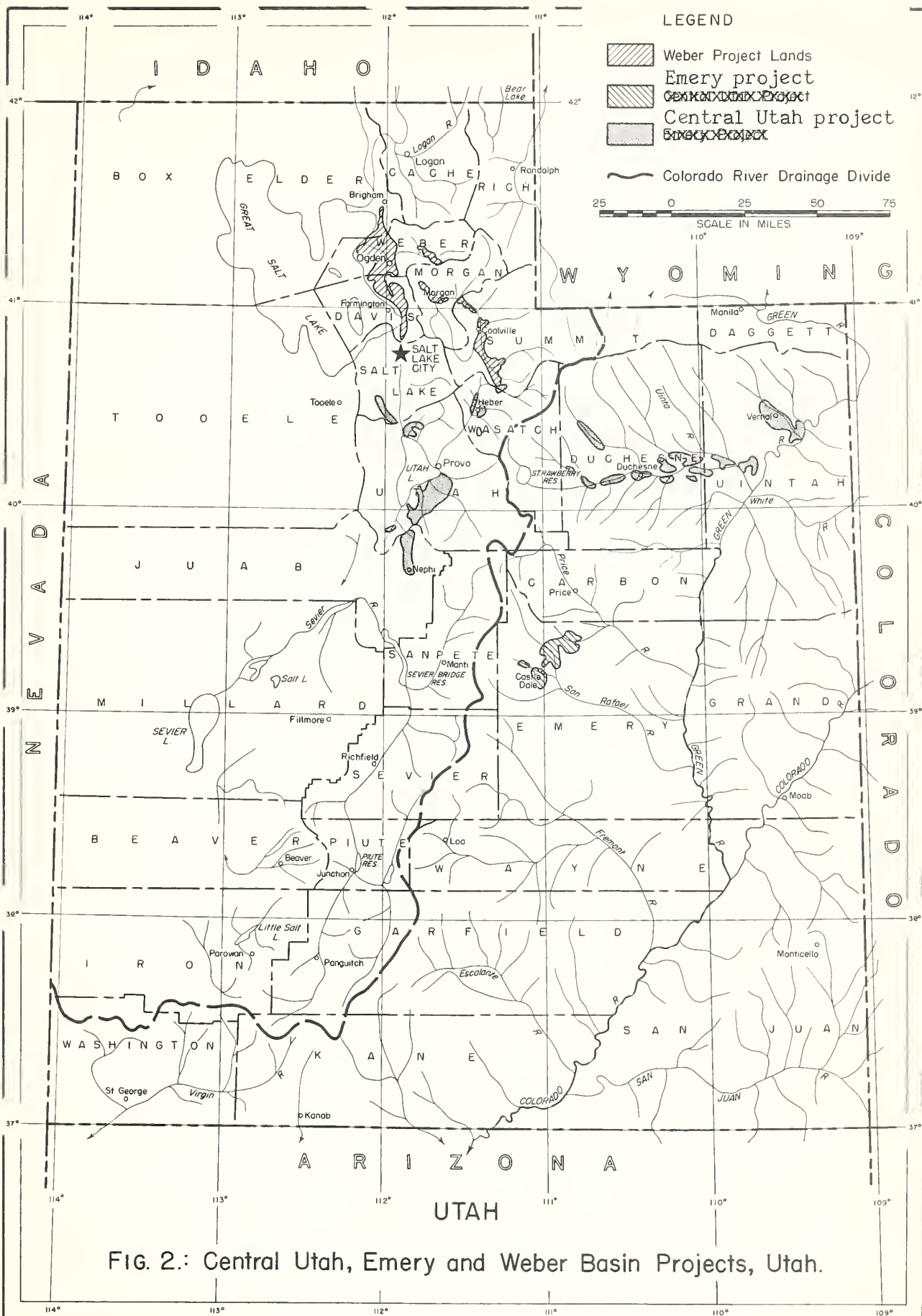
The project will supply 40,000 acre-feet of water for municipal and industrial use to communities in Davis and Weber Counties. The area contains 26 incorporated communities and 90 percent of the population of the Weber Basin.

Table 2. Land to be irrigated and water allocated, Weber Basin Reclamation and Colorado River Storage projects, Utah

Item					
	: Weber Basin :		: Colorado River Storage :		
	: Reclamation :		: Project :		
	: Project 1/ :	Utah	Emery :	County :	Total 2/ State
IRRIGATED LAND					
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
New lands - - - - -	50,500	28,540	3,630	32,170	82,670
Supplemental - - - - -	24,388	131,840	20,450	152,290	176,678
Total - - - - -	74,888	160,380	24,080	184,460	259,348
WATER SUPPLY					
	<u>Acre feet</u>	<u>Acre feet</u>	<u>Acre feet</u>	<u>Acre feet</u>	<u>Acre feet</u>
Irrigation - - - - -	176,900	175,200	32,400	207,600	384,500
Municipal and industrial use - - - - -	40,000	48,800	0	48,800	88,800
Total - - - - -	216,900	224,000	32,400	256,400	473,300

1/ Fuhriman, W. U., Blanch, G. T., and Stewart, C. E. An economic analysis of the agricultural potentials of the Weber Basin Reclamation Project, Utah. Utah Agr. Expt. Sta. Rept. No. 7. December 1952. See also footnote 4, page 6.

2/ Committee on Interior and Insular Affairs. Colorado River Storage Project. Senate Report 500, 84th Congress.



Acres Irrigated and Acres to Receive Additional Water

The irrigated area of the State contains 1,165,000 acres (table 3). Of the total, 407,000 acres, or 35 percent, have an adequate water supply, and 758,000 acres have only a partial supply. The irrigation development authorized under the Weber Basin Reclamation and Colorado River Storage Projects includes 83,000 acres of nonirrigated land and 177,000 acres to receive a supplemental supply, or a total acreage of 260,000 acres (table 3). With these developments, which are expected to be completed by 1975, the total acreage of land irrigated will be increased to 1,248,000 acres. Land with an adequate supply will be increased to 667,000 acres, and land with a partial supply will be reduced to 581,000 acres. Small irrigation projects may provide additional development during the next two decades. This small project development will provide water primarily for land with a partial supply. The acreage of nonirrigated land added, other than land included in the Weber Basin and Colorado River Storage Projects, is likely to be offset by changes of irrigated land use to residential, new roads, and industrial uses. This shift of irrigated land to other uses is not likely to amount to more than 2 percent of all land irrigated.

If all the water allocated to Utah from the Colorado River and the unused water in the Bonneville Basin were developed, and estimated 400,000 acres of nonirrigated land could be added to the irrigated area of the State, and probably half of the 580,000 acres shown with a partial water supply could be provided with adequate water. This potential development would increase the irrigated acreage to about 1,650,000 acres. But this potential is not likely to be reached by 1975. Because of location, limited water in given areas, and the high cost of development, a considerable acreage of irrigated land in the State may always have an inadequate water supply.

Supplying water to lands under the Colorado River Storage and Weber River Basin Projects that now have an inadequate supply and the irrigation of nonirrigated lands will greatly increase agricultural production and farm incomes in these project areas.

Table 3. Land now irrigated and acreage authorized for development, Utah

Item	Irrigated area
	<u>1,000 acres</u>
Present irrigated land: <u>1/</u>	
Land with adequate supply - - - - -	407
Land with partial supply - - - - -	758
Total - - - - -	1,165
Colorado and Weber Basin irrigation developments authorized: <u>2/</u> <u>3/</u>	
Nonirrigated land - - - - -	83
Land to receive supplemental supply - - - - -	177
Total - - - - -	260
Total irrigated land after authorized development:	
Land with adequate supply - - - - -	667
Land with partial supply - - - - -	581
Grand total area to be irrigated- - - - -	1,248

1/ See footnote 2, Thomas W. P. et al., p. 2. Page 30, table 18.

2/ See table 2, footnote 2. p. 7.

3/ See table 2, footnote 1. p. 7.

ECONOMIC DEVELOPMENT OF UTAH

Factors that Influence Growth

In 1940, manufacturing accounted for 29 percent of the employment in Utah, while in 1955 it was 44 percent. This enlarged activity came about through a change from the processing of agricultural products to the manufacturing of steel and steel fabrication, the refining of metals and oil, the manufacturing of chemicals--fertilizers, phosphates, and ammonia--and of electronic supplies, the processing of uranium, and the building of missiles and other war equipment.

The basic materials are available in Utah to support these industries. They include coal, iron ore, petroleum, natural gas, copper, lead, zinc, vanadium, phosphates, uranium, potash, salt, and many other materials needed in industry. Development of water and power through the Colorado River Storage and Weber River Basin Projects and other Federal, State, and private projects will make major contributions to industrial and population growth in this area.

Until recently, Utah cities have been short of water. During the years when precipitation was below normal, water for culinary and industrial use was greatly restricted. Guarantee of a firm water supply for industry could not be given. This situation retarded expansion of existing companies, and new industries needing water did not locate in the State. Lack of water became a major factor in retarding industrial and population growth.

However, the enlarged demand for water by the government for use in war plants during the war period and by private industries that supplied goods to the government and to the expanded population in Utah and the West made the water-shortage problem more acute. Cities began programs to develop additional water from their own water resources. The Federal Government assisted by authorizing new water development and by greater sales of water from old and new projects to cities and communities.

As a result of these programs, the larger cities of the State have been able to meet water needs in recent years. Contracts now in effect between cities and the Federal Government call for annual delivery of about 125,000 acre-feet of water. Further development of water resources and increased efficiency in use of water by cities and water districts and associations are underway to provide water for future use. In addition to these developments, 49,000 acre-feet of water are planned in the Colorado River Storage Project for use by industry in Utah. Water now available for culinary and industrial use and planned development appear to assure an adequate water supply for both industrial and population growth for the next 20 years.

Utah is favorably located as the trade center for the intermountain area. Available labor and the favorable attitude of employees are also important in the industrial development of the State. The Federal Government recognized these factors when large warehouses, repair shops, and air bases were located in Utah.

The State has excellent transportation facilities. However, the Federal road program will greatly expand and improve both State and interstate roads, which will aid in movement of goods to State and out-of-State markets. During the period of highway construction, demand for labor will expand.

Recreation and the tourist trade have become an important part of the State's economy. The growth of population in the West, the building of storage dams on the Colorado River, the improvement of Federal parks, and the growing interest of tourists in the history and people of Utah support an expansion of this industry.

Planning for Agricultural Development

In planning agricultural development, consideration must be given to further development and utilization of natural resources, growth of industry, commerce, and population, and to changes in size and location of markets for agricultural products. In order to show the relationship of the State to expected changes in population and demand for agricultural products in Utah and for larger markets, some data and analyses are included for the Upper Basin States, the Mountain States, and the far West.

Agricultural planning requires projections of industrial and population growth and of changes in demand for agricultural products. Information compiled is intended for use in economic analyses and planning for agricultural programs.

Population

Western States and Utah.- In 1955, 3,449,000 people lived in Colorado, New Mexico, Utah, and Wyoming (table 4). From 1940 to 1955, the population of the United States increased 24 percent; the 11 Western States, 66 percent; the 4 Upper Colorado River Basin States, 40 percent; and California, 86 percent (fig. 3). Although population did not increase as fast from 1940 to 1955 in the 4 Upper Basin States as it did in some Western States, the rate of growth was 67 percent greater than for the Nation. From 1950 to 1955, population in these 4 states increased 442,000, or 15 percent, an average of 3 percent per year (table 4). The total increase in population for the United States during this period was 9 percent.

Growth in population of the Upper Basin States reflects the nation-wide trend. However, growth in population was accelerated in this area by war and postwar demands for goods and services by the Government and by coast markets. Both employment opportunities and population increased rapidly because of these factors.

This great expansion of population in the West has made it necessary to develop resources, facilities, and services to supply local and western markets. To meet these demands, industry has expanded and is planning further development. The growth in population has also changed both the nature of demand and the market centers for many agricultural commodities. In the past, most of the surplus agricultural products were shipped to midwestern and eastern markets. With the expanded population of the West, a larger percentage of these products is needed to supply western markets. Future expansion in the western economy will require further movement of agricultural products westward and major adjustments in agricultural production.

Table 4. Population, Upper Colorado River Basin States, Western States, and United States, 1940, 1950, and 1955

Area	Population			Percentage increase	
	1940	1950	1955	1940-55	1950-55
	Thousands	Thousands	Thousands	Percent	Percent
Colorado - - - - -	1,130	1,335	1,547	37	16
New Mexico - - - - -	531	686	793	49	16
Utah - - - - -	552	695	797	44	15
Wyoming - - - - -	250	291	312	25	7
Total - - - - -	2,463	3,007	3,449	40	15
8 Mountain States ^{1/} - -	4,155	5,049	5,925	43	17
California - - - - -	6,980	10,620	12,961	86	22
11 Western States ^{2/} - -	13,961	19,641	23,185	66	18
United States - - - - -	131,954	151,234	164,303	24	9

^{1/} Mont., Idaho, Wyo., Colo., N. Mex., Ariz., Utah, and Nev.

^{2/} Wash., Oreg., Calif., and the 8 Mountain States.

U. S. Bureau of the Census. Population reports - 1940, 1950, and 1955.

Population projections, Western States.- Planning the development of any area requires careful consideration of the probable growth of population. Although change in population cannot be projected with a high degree of accuracy, projections can be made within a framework of certain assumptions that are of value when considered within the stated scope.

The projection for the 4 Upper Basin States is 5 million people in 1975, or an increase of about 1.5 million (table 5). In 1955, there were about 6 million people in the 8 Mountain States; the projected population for 1975 is 9.6 million, an increase of 62 percent (fig. 4).

If the 1950-55 rate of population increase for the 11 Western States continues, this area will have 39 million people by 1975, an increase of 68 percent (table 5). Projections for California show 23 million people by 1975, an increase of 77 percent during the next 20 years.

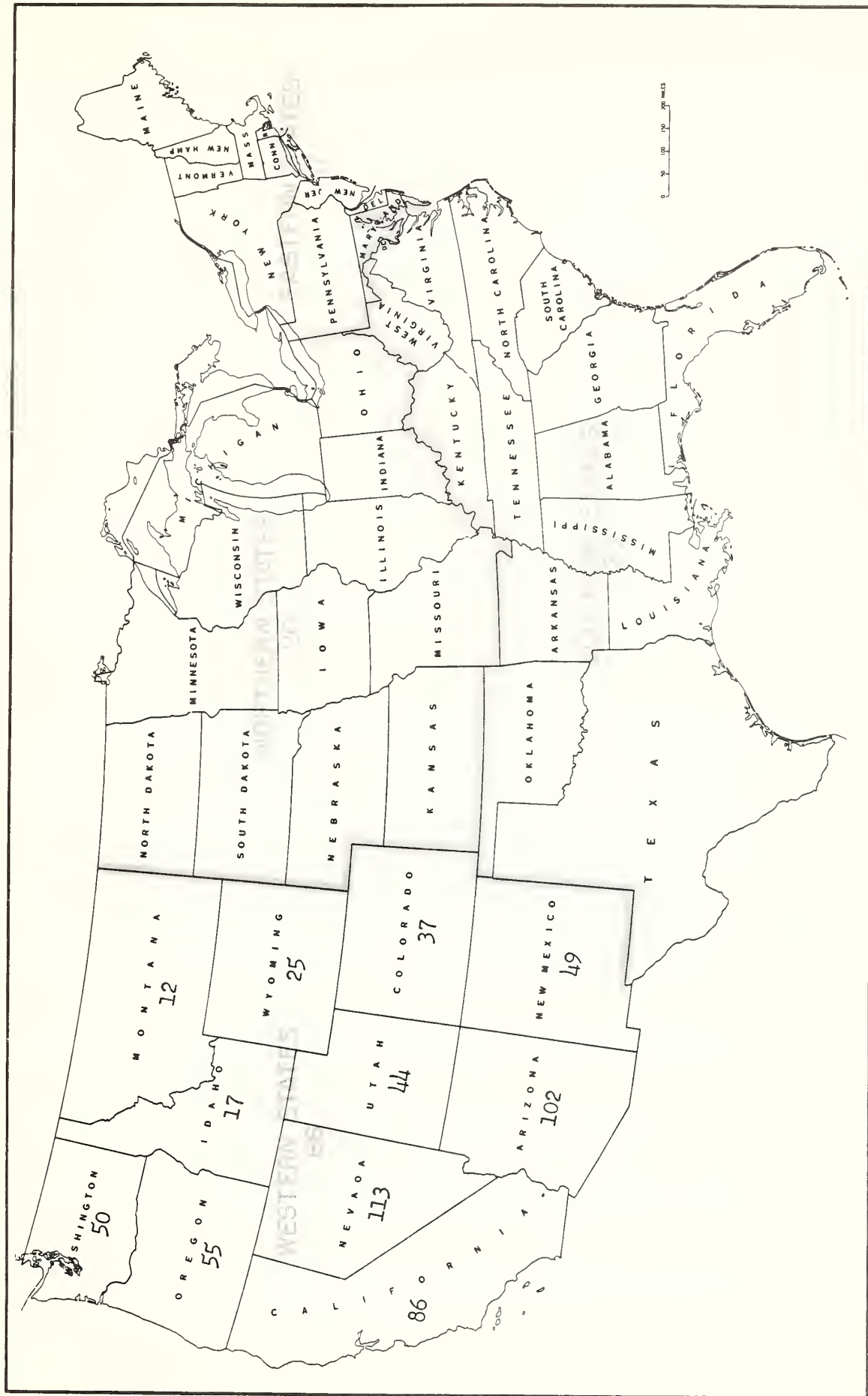


Fig. 3. - Percentage change in population, 1940-55

Table 5. Population, selected areas and United States, 1955 and projected 1975

Area	Population		
	1955	Projected 1975 ^{1/}	Increase 1955 to 1975
	Thousands	Thousands	Percent
4 Upper Colorado Basin States - - -	3,449	5,000	45
8 Mountain States - -	5,925	9,584	62
California - - - - -	12,961	23,000	77
11 Western States - -	23,185	39,000	68
United States - - -	164,303	220,000	34

^{1/} Nielson, H. C. Population trends in United States through 1975. Stanford Research Institute. 1955.

Population projections, Utah.- Population projections for 1975 for Utah have recently been made by the United States Bureau of the Census, the Stanford Research Institute, and the Bureau of Economic Research, University of Utah. The projections by these agencies are: Bureau of the Census, 1,247,000; Stanford Research Institute, 1,239,000; and University of Utah, 1,475,000 (table 6). The projections made by the Bureau of the Census and Stanford Research Institute are based on the trend in population, or births minus deaths plus net migration. This trend was extended to the year 1975. The Bureau of Economic Research, University of Utah, used an "economic analysis" method. This method included trends of population that were adjusted in light of natural resources, potential economic development, and other economic factors that might affect growth of population.

Many factors and influences that cannot be measured may affect population growth. For this reason, two projections of population in Utah by 1975 are used in this report (fig. 5).

Projection I of a population of 1,200,000 was based on:

(1) The assumption that present prices may decline to a lower level without a major depression, that industrial expansion may be at a lower rate, and that war tensions will be less acute;

(2) that during the next two decades, not all the total expected resources from the Colorado River Storage Project and other resource developments may be available; and

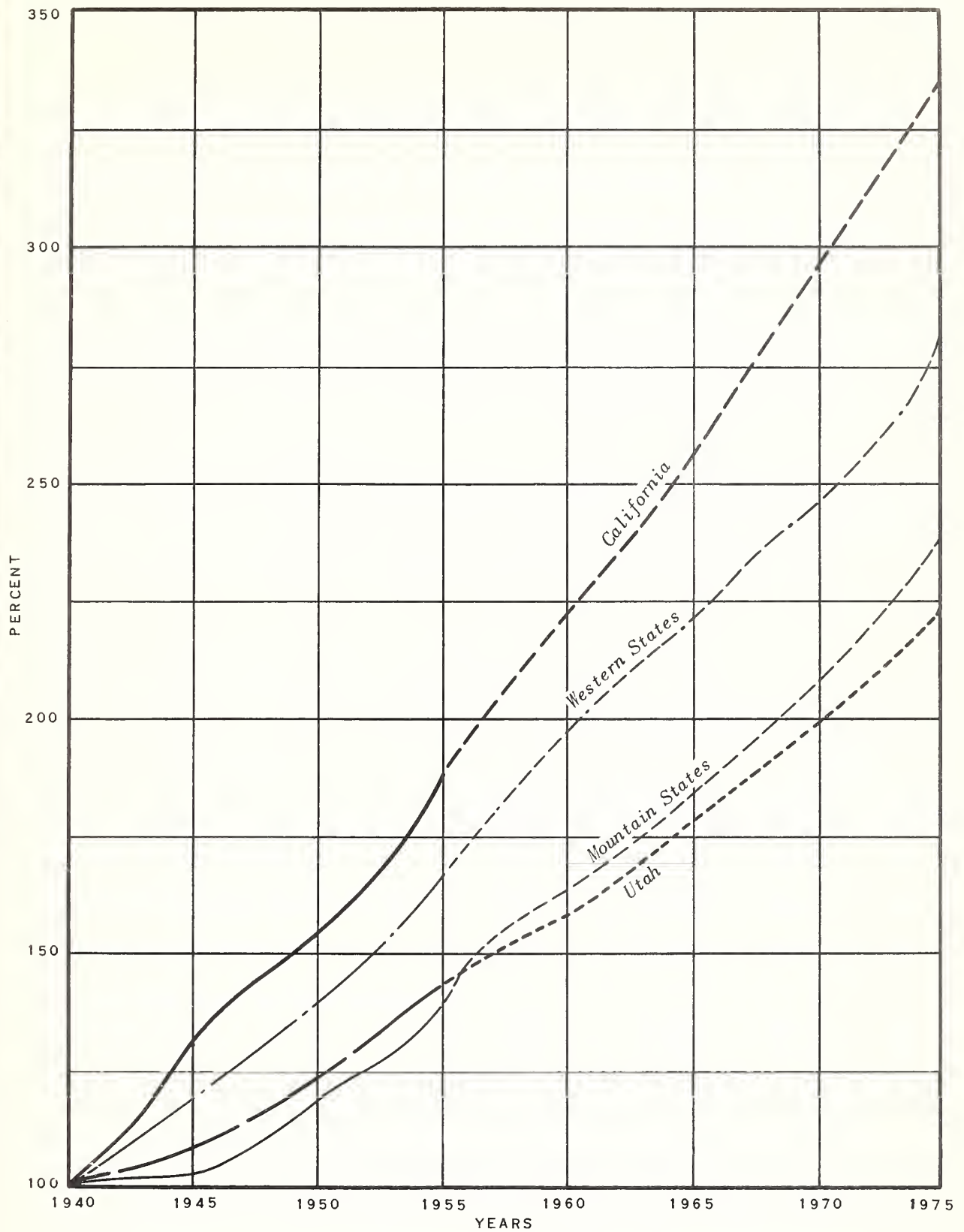


Fig. 4. Percentage change in population, Western States, Mountain States, California, and Utah, 1940 to 1955 and 1960 to 1975 projected

(3) projections by the Bureau of the Census and Stanford Research Institute on Utah's population by 1975 (table 6).

Projection II of a population of 1,500,000 was based on:

(1) The assumption that prices will continue at about the present level, and that industry will expand at about the present rate, with no major wars but continuation of international war tensions;

(2) that land, water, minerals, and other resources will be developed by the Colorado River Storage and similar projects at a rate that will provide resources needed for industrial and population growth; and

(3) the projection by the Bureau of Economic and Business Research, University of Utah (table 6).

The projections of Utah's population of 1,200,000 and 1,500,000 by 1975 are used primarily to estimate the demand for food at two levels of economic growth. Whether the population is 1.2 million or 1.5 million, this growth will have major impacts on agriculture and the use of resources.

Table 6. Population, 1955, and projections, 1975, Utah

Projection	Population			
	1955	1975	Increase	
	Thousands	Thousands	Number	Percent
Bureau of the Census <u>1</u> / - - - - -	797	1,247	450	56
Stanford Research Institute <u>2</u> / -	797	1,239	442	55
University of Utah <u>3</u> / - - - - -	797	1,475	678	85
Projections used in this study:				
Projection I - - - - -	797	1,200	403	50
Projection II - - - - -	797	1,500	703	88

1/ U. S. Bureau of Census Report, Series P-2, No. 45. Oct. 1956, unpublished estimate prepared by U. S. Census Bureau for U. S. Bureau of Public Roads; Current Population Estimate Series P-25, No. 160.

2/ Nielson, H. C. Population trends in the United States through 1975. Menlo Park, California: Stanford Research Institute. August 1955.

3/ Harline, O. L. and Sargent, R. L. Utah Economic and Business Review. Bureau of Economic and Business Research, University of Utah. Vol. 17, No. 12 and Vol. 18, No. 1. 1958.

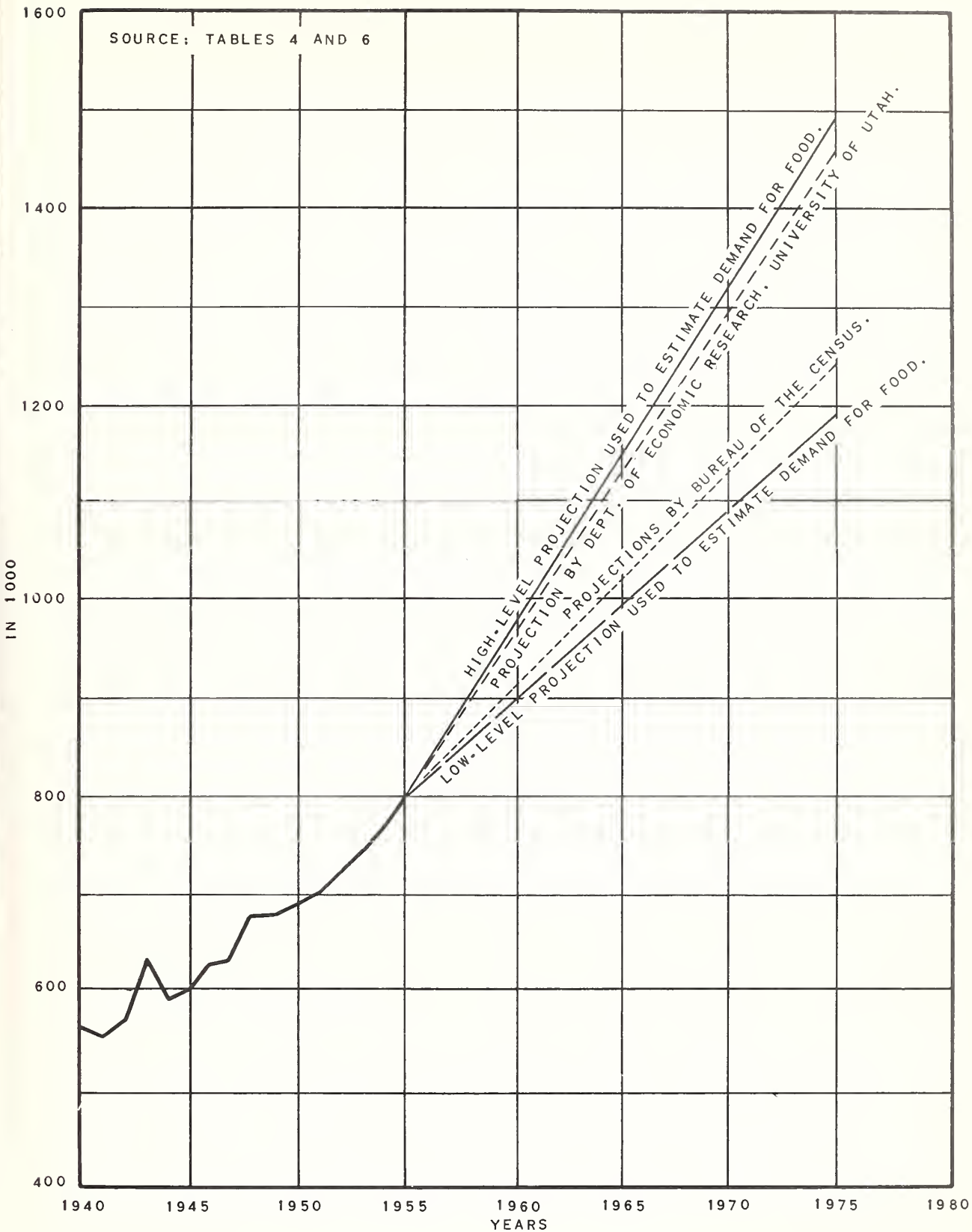


Figure 5. Population in Utah, 1940-55, and projections 1975

Population Growth and Need for Electric Power

On January 1, 1957, the capacity of the installed electric power plants in Utah was 679,400 kilowatts. The plant capacity under construction was 205,600 kilowatts, or a total of operating plants and plants under construction of 885,000 kilowatts (table 7). The present electric plant capacity, plus plants under construction, is equal to about one kilowatt capacity per capita. Hydroelectric plants at Glen Canyon, Flaming Gorge, and Central Utah project will have a capacity of about 1,000,000 kilowatts. It is anticipated that Utah will obtain about 300,000 kilowatts from the Colorado River Storage Project. In February 1958, a private power company operating in Utah announced that it planned immediate development of a thermal plant with a capacity of 345,000 kilowatts.

The total capacity of plants operating and under construction, new plants planned by private power companies, and the assumed amount from the Colorado River Storage Project is 1,530,000 kilowatts for the State (table 7).

Based on present per capita consumption of electric power in Utah, this total operation and planned capacity would provide power for a population of 1,500,000 people. Per capita consumption is expected to increase greatly, however. If the projection of industrial and population growth is realized, and if the rate of consumption increases as expected, the State will need more than 2,000,000 kilowatts of electric power capacity by 1975.

At present, 70 percent of the electric power used in Utah is derived from carbons. Even with the hydroelectric power obtained from the Colorado River and from other water projects, the percentage of total power obtained in the future from thermal plants is likely to be greater than at present.

The price of electric power will influence greatly the future industrial and population growth in Utah. Development and use of power from the Colorado River Storage Project and from large coal deposits should provide the State with ample electrical energy at a price competitive with rates in other industrial areas.

Industrial Growth in Utah

From 1920 to 1940 was featured in Utah by lack of employment in agriculture and industry. Many families were on relief rolls. During this period, the number of people employed in agriculture, mining, and industry remained about constant, while the population increased by about 100,000, or 22 percent. Failure of the basic industries to provide employment and opportunities for an expanding population resulted in a backing up of rural population on the farms, unemployment in the cities, and migration of many people to the Pacific Coast and other areas.

Table 7. Installed capacity of electric power generating plants now operating and capacity of plants to be constructed, Utah

Item	Capacity
	<u>Kilowatts</u>
Capacity of plants in operation, 1957 <u>1/</u> - - - - -	679,400
Capacity of plants under construction, 1957 <u>1/</u> - - - - -	205,600
Total - - - - -	885,000
Assumed capacity from Colorado River Storage Project - - - -	300,000
Planned plant construction by private corporations <u>2/</u> - - - -	345,000
Total - - - - -	645,000
Grand total capacity of plants - - - - -	1,530,000

1/ Data in letter, 1957, from Federal Power Commission. Regional Office, San Francisco, California.

2/ Bernik, R. W. Business Editor. Salt Lake Tribune. Feb. 13, 1958.

Employment.- The total labor force in Utah increased from 181,000 in 1940 to 278,000 in 1955, an increase of 54 percent (table 8). As a result of industrial expansion in Utah, the number of industrial workers employed increased from about 80,000 in 1940 to 153,000 in 1955, or 89 percent. Government employment increased 146 percent. Of the increase in Government employment, 62 percent, or 31,500 was for defense. Of the total employment in 1940 in the basic industries, 53 percent was in agriculture, 29 percent in manufacturing, and 18 percent in mining (fig. 6). However, by 1955 agriculture employed only 38 percent; manufacturing 44 percent; and mining 18 percent.

Projected employment.- If the projected population of 1,200,000 is realized by 1975 and the ratio of employment to population for 1955 holds for 1975, the total labor force will increase from 278,000 in 1955 to 432,000 in 1975 (table 8). If the same ratio is applied to a population of 1,500,000, the total labor force for the State will be 540,000. This number is about equal to the total population in Utah in 1940.

In 1975, 59 percent of the total projected number of workers employed in the basic industries will be employed in manufacturing, 24 percent in agriculture, and 17 percent in mining. In 1955, food processing made up about 23 percent of total manufacturing employment. By 1975, this percentage is expected to decline to about 15 percent.

Table 8. Labor force, by kinds of employment, Utah, 1940-55, and projected 1975

Item	:	:	:	:	Percentage	Projections	
	:	:	:	Change	change	1975 3/	
	1940	1955	1940-55	1940-55	1940-55	I	II
	Thous.	Thous.	Thous.		Pct.	Thous.	Thous.
Population 1/ - - - -	552	797	245		44	1,200	1,500
Labor force: 2/							
Employees in basic industries:	No.	No.	No.			No.	No.
Agriculture - -	32,700	29,000	-3,700		-11	4/29,000	- - -
Manufacturing -	17,900	33,350	15,450		86	70,000	- - -
Mining - - - -	11,300	14,000	2,700		24	20,000	- - -
Total - - - -	61,900	76,350	14,450		23	119,000	- - -
Government - - - -	21,600	53,100	31,500		146	60,000	- - -
All other - - - -	97,500	148,550	51,050		52	253,000	- - -
Total labor force	181,000	278,000	97,000		54	432,000	540,000
Percentage employed in basic industries:	Pct.	Pct.				Pct.	
Agriculture - - -	53	38	- - - - -	- - - - -	- - - - -	24	- - - -
Manufacturing - -	29	44	- - - - -	- - - - -	- - - - -	59	- - - -
Mining - - - - -	18	18	- - - - -	- - - - -	- - - - -	17	- - - -

1/ U. S. Bureau of the Census. Series P-25, No. 145, and population reports.

2/ Industrial Commission of Utah. Annual Report, 1955. Includes agriculture, governmental, self-employed, railroad, and nonprofit (religious) labor, and labor covered by Employment Security Act.

3/ Projections for 1975 are based on the percentage that the labor force was of population in 1955. Number employed in basic industries based on trend, 1950 to 1955.

4/ A general decrease per unit of output is expected in employment in agriculture. But it is assumed that this decrease will be offset by increased intensification in agriculture and greater total acres of irrigated cropland.

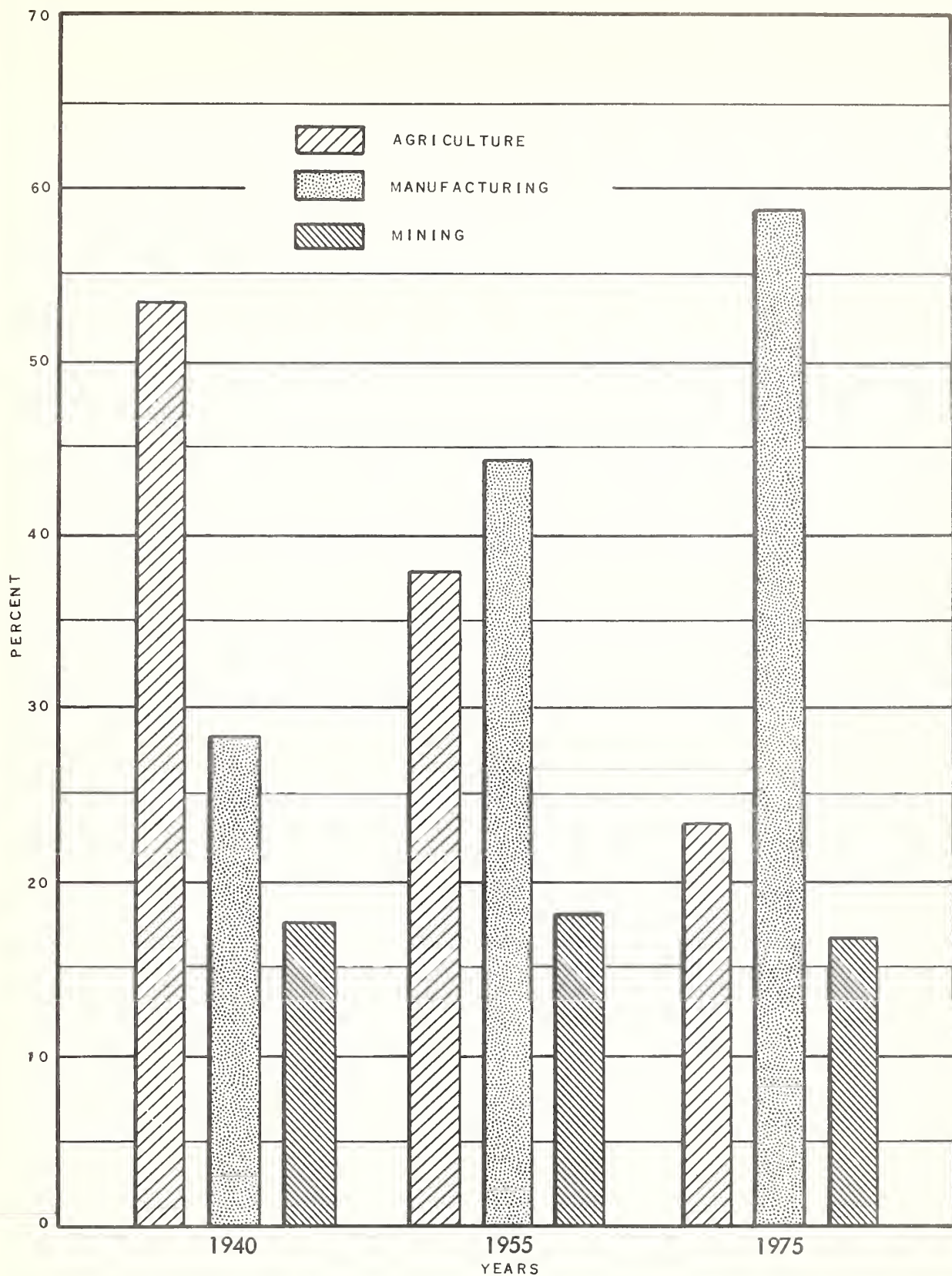


Fig. 6. Percentage of laborers in basic industries employed in agriculture, manufacturing, and mining, Utah, 1940-1955, and projections for 1975

Income and value of products.- From 1940 to 1955, there was an increase in production and income in agriculture, mining, and manufacturing. Agricultural income increased from \$46 million to \$146 million from 1940 to 1955, an increase of 217 percent (table 9). The value of mineral products increased 213 percent and the value of manufactured products increased 582 percent for the same period. Retail trade increased from \$171 million to \$842 million, an increase of 392 percent in the 15-year period. Personal income increased 360 percent.

In 1955, the dollar value from agriculture, mining, manufacturing, industrial wages, retail trade, and personal income was about \$3.4 billion as compared with \$737 million in 1940 (table 9 and fig. 7). However, prices increased greatly so that a large part of the change in value resulted from price increases. The increase in volume and quality of production, improvement in grading of products, changes in place and methods of marketing, new industries including Government plants for production of war materials, number of people employed, higher wages and other factors account for 248 percent and price increases for 114 percent of the change in income and value of products from 1940 to 1955 (table 9).

During this 15-year period, agricultural prices were relatively high and most farm operators were prosperous. Part-time farmers with small farm units obtained employment at public plants or with private industry. High farm prices and employment for part-time farmers raised the level of living for most farmers of the State.

Projected purchasing power of Utah consumers.- Personal incomes in Utah increased from \$269 million in 1940 to \$1.2 billion in 1955, an increase of 360 percent (tables 9) More than a third of the increase in personal income was the result of changes in prices. In 1940, personal income was \$487 per capita as compared with \$1,553 in 1955 (table 10). Personal income has been projected for the United States at \$2,449 per capita in 1975, an increase of 33 percent from 1955.^{5/} Based on a 33-percent increase in per capita personal income, personal income in 1975 would be \$2,065 per capita in Utah, or a total personal income of about \$2.5 billion for a population of 1,200,000 and more than \$3 billion if the population reaches 1,500,000. Retail sales increased 392 percent from 1940 to 1955. The value of retail sales is estimated at from \$1.7 to \$2.1 billion for 1975. Present trends of increase in personal income and retail sales are favorable to increased demand for many agricultural products.

^{5/} See footnote 1, Daly, Rex F., p. 1.

Table 9. Income, value of products, and wages, Utah, 1940 and 1955

Source of income	:	:	:	:	: Increase resulting	
	:	:	:	:	:Percentage: from	
	:	:	:Increase:	: increase :	Price	:Other
	: 1940 :	: 1955 :	: 1940-55 :	: 1940-55 :	:increases 6/:	:causes
	Mil. dol.	Mil. dol.	Mil. dol.	Pct.	Mil. dol.	Mil. dol.
Agricultural income <u>1/</u>	46	146	100	217	52	48
Manufactured products <u>2/</u>	44	300	256	582	50	206
Mining <u>2/-</u> - - - - -	104	326	222	213	119	103
Total wages of insured industrial workers <u>3/</u>	103	556	453	440	117	336
Retail trade <u>4/-</u> - - -	171	842	671	392	195	476
Personal income <u>5/</u> - -	269	1,238	969	360	306	663
Total - - - - -	737	3,408	2,671	362	839	1,832

1/ U. S. Agricultural Marketing Service, The Farm Income Situation. Sept. 1956; and Utah Agr. Expt. Sta. Mimeo Series 393.

2/ Nielson, Elroy. Utah Economic Patterns. University of Utah Press. 1956. pp. 80 and 198.

3/ Industrial Commission of Utah. Annual Report, 1955. Workers covered by Employment Security Act.

4/ U. S. Bureau of the Census. Retail Trade. Census of Business, 1956.

5/ U. S. Dept. of Commerce. Survey of Current Business. Sept. 1955 and Aug. 1956.

6/ Based on increase of 114 percent in U. S. wholesale prices from 1940 to 1955.

Table 10. Personal income and retail sales, United States, Western States, and Utah, 1940, 1955, and projected 1975

Item	Unit	1940	1955	Projections 1975	
				I	II
Population, Utah - - -	Number	552,000	797,000	1,200,000	1,500,000
Personal income per capita: <u>1/</u>					
Utah - - - - -	Dollars	487	1,553	2,065	2,065
Western States - -	Do.	703	2,040	2,723	2,723
United States - -	Do.	595	1,847	2,449	2,449
Retail sales, Utah <u>2/</u>	\$1,000	171,000	842,000	1,684,800	2,106,000

1/ Projected per capita personal income for Utah and the Western States is based on the percentage change projected for the United States. Daly, Rex F. The Long-Run Demand for Farm Products. Agr. Econ. Res. 8:73-91. July 1956.

2/ Projection based on per capita sales for 1955.

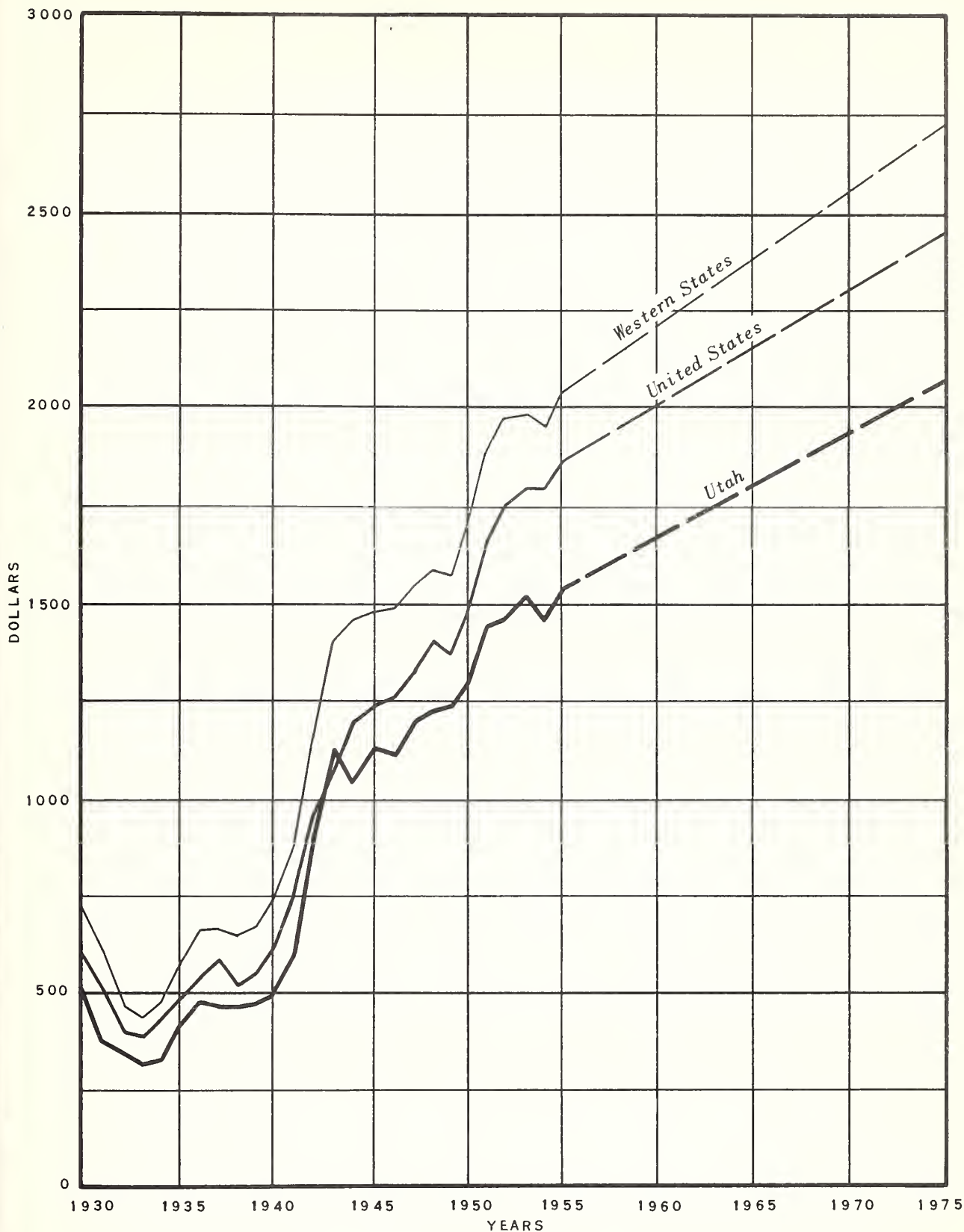


Fig. 7. Personal income per capita, 1930-55, and projections for 1975, United States, Western States, and Utah

FOOD PRODUCTION AND CONSUMPTION

The primary purpose of this study is to analyze the present and the projected demand for food in Utah. Population and rates of consumption largely determine this demand. The present and projected populations for 1975, as shown in tables 4, 5, and 6, were used to measure food demands. Except for fruit and mutton and lamb 6/ the per capita consumption rates used for 1955 and for 1975 projections are rates for the United States, as published by the United States Department of Agriculture 7/ (table 11).

Industrial and population growth and the resulting increase in demand for food associated with this expansion will vary with each commodity. Also, these changes in demand for some commodities will affect other commodities and the agricultural economy as a whole.

Commodities with local demands at present will be affected more by increased population in Utah than products that are sold largely on outside markets. The commodities most affected from enlarged local markets likely will be dairy products, eggs, chickens, fruits, and fresh and processed vegetables. Even with increase in consumption by 1975, Utah will continue to export feeder cattle, lambs, turkeys, sugar, and potatoes to outside markets. However, these latter products will be affected from increased local requirements.

As the purpose of this analysis is to estimate the future requirements for food and the impacts of these requirements on the agricultural economy of the State, the major consideration and discussion involves requirements for food.

It is not the purpose or the scope of this study to project the future agricultural production for Utah. It is recognized, however, that the increased demand for food by 1975 will be provided through increased production of agricultural commodities with high demand on the local and western markets and from importations from surplus areas. The increased agricultural production will likely result in adjustments in production programs with more intensive use of agricultural resources and in increased yields from technological improvements. The increased yields will vary with the commodity, the general price level, the relationship of prices received to production costs, and the development and efficient use of agricultural resources.

6/ Lamborn, E. W. and Anderson, R. H. Consumer demand for fruit, Salt Lake City, Utah, 1948-49. Utah Agr. Expt. Sta. Bul. 356. 1952.

Doty, H. O. The distribution of lamb and mutton for consumption in the United States. U. S. Dept. Agr. AMS-93. Feb. 1956. (Processed).

7/ See footnote 1, Daly, R.F., p. 1. Statistical data and notes on long-run demand for farm products.

Barton, G. T., and Rogers, R. O. Farm output: Past changes and projected needs. U. S. Dept. Agr., Agr. Inform. Bul. 162. August 1956. (Mimeographed.)

Table 11. Production and consumption of farm products, 1955, and projected population and food requirements, 1975, Utah

Item	1955		Projected food requirements 1975 2/		Increase in requirements 1955-1975	
	Production 1/	Consumption	Total	Total		
	(population 797,000)	(population 797,000)	(population 1,200,000)	(population 1,500,000)	(population 1,200,000)	(population 1,500,000)
	1,000 lbs.	1,000 lbs.	1,000 lbs.	1,000 lbs.	Pct.	Pct.
Total red meats 3/-	152,054	133,400	213,960	267,450	60.4	100.5
Beef and veal -	111,554	72,800	112,800	141,000	54.9	93.7
Mutton and lamb -	32,200	7,400	11,160	13,950	50.8	88.5
Pork -	8,300	53,200	90,000	112,500	69.2	111.5
Total poultry 4/-	43,917	21,041	38,640	48,300	83.6	129.6
Chickens -	7,379	17,056	32,400	40,500	90.0	137.5
Turkeys -	35,538	3,985	6,240	7,800	56.6	95.7
Total all meats	194,971	154,441	252,600	315,750	63.6	104.4
Total live-stock prod. -	747,211	597,750	928,320	1,160,400	55.3	94.1
Dairy products 5/	697,000	557,900	864,000	1,080,000	54.9	93.6
Eggs 4/	50,211	39,850	64,320	80,400	61.4	101.8
Total live-stock & prod. -	942,182	752,191	1,180,920	1,476,150	57.0	96.2
Total fruit 6/	88,618	158,603	284,400	355,500	79.3	124.1
Total vegetable 7/8/	275,944	165,059	288,000	360,000	74.5	118.1
Total field crops -	550,282	294,332	405,600	507,000	37.8	72.3
Wheat 1/ -	230,150	137,084	192,000	240,000	40.1	75.1
Potatoes 1/ -	178,232	80,497	102,000	127,500	26.7	58.4
Sugar 6/ -	141,900	76,751	111,600	139,500	45.4	81.8
Total all crops -	944,844	617,994	978,000	1,222,500	58.3	97.8
Other food 9/-	50,000	99,386	146,160	182,700	47.1	83.8
Total food -	1,907,026	1,469,571	2,305,080	2,881,350	56.9	96.1

Footnotes on page 27.

Footnotes for Table 11

1/ U. S. Department of Agriculture, Agricultural Statistics, 1955. Production for 1955 was used, except for fruit, canning crops, wheat, and potatoes, which were based on a 5-year average, 1951-55.

2/ Based on: Daly, R. F. The Long-Run Demand for Farm Products. Agr. Econ. Res. 8:73-91, 1956.

Lamborn, E. W., and Anderson, R. H. Consumer Demand for Fruit; and Doty, H.O. The Distribution of Lamb and Mutton for Consumption in U.S.

3/ U. S. Agricultural Marketing Service. Carcass weight. Rates of consumption: Livestock and Meat Situation. May and November 1957. For lamb consumption: Doty, H.O., The Distribution of Lamb and Mutton for Consumption in U. S., AMS-93, Feb. 1956. (Mimeographed.)

4/ U. S. Agricultural Marketing Service, Salt Lake City, Utah. Production: Utah 1955 annual dairy products report. Consumption: Daly, R. F., The Long-Run Demand for Farm Products, op. cit.

5/ U. S. Agricultural Marketing Service. Production and consumption: Poultry and Egg Situation, 1957.

6/ U. A. Agricultural Marketing Service. Agricultural Statistics, 1955. Per capita production: Average production, 1942-53. Per capita consumption: Consumption of Food in U. S. 1909-52. Handbook 62, Oct. 1955.

7/ Daly, R.F. op. cit.

Lamborn, E. W. and Anderson, R.H. Consumer Demand for Fruit, Salt Lake City, Utah, 1948-49. Utah Agr. Expt. Sta. Bul. 356. August 1952.

8/ U. S. Agricultural Marketing Service. Marketing and Transportation Situation 1957: Outlook issue.

9/ Includes other grain products, fats, oils, beans, and rice. See footnote 3 above.

Production and Consumption, 1955

Data in table 11 show the balance between food production and the amount needed to meet requirements at United States consumption rates for 1955. Total food production in Utah in 1955 was about 1.9 billion pounds. Estimated consumption was 1.5 billion pounds with a surplus of 0.4 billion pounds (table 11). Production amounted to about 2,400 pounds and consumption to about 1,800 pounds per capita.

Production of beef, veal, lamb, mutton, dairy products, eggs, and turkeys was in excess of consumption (table 11). Production of pork amounted only to 16 percent of consumption, and chicken meat produced was less than half the amount consumed in the State.

Production of peaches, pears, apricots, and cherries was in excess of consumption, and apples consumed amounted to 22 percent more than were produced. Production of vegetables and other field crops was above the amount consumed.

Projections of Food Consumption

The total food consumption per person was estimated at 1,844 pounds in 1955 and 1,921 pounds in 1975 (table 11). The change varies with the commodity. Expect for wheat, sugar and potatoes, estimated per capita consumption for 1975 is equal to or above consumption for 1955.

Estimated Food Needs for 1,200,000 People

The projected consumption for 1975 for a population of 1,200,000 is about 2.3 billion pounds, an increase of 57 percent over 1955 (tables 6 and 11). Total production of food in 1955 was 0.4 billion pounds less than the projected food consumption for 1975.

Production of beef, veal, and pork in 1955 was less than the estimated consumption for 1975 (table 11). By 1975, the local demand for mutton and lamb will likely increase more than 50 percent from 1955 demand, but there will still be excess production. The projected demand for red meat is 61.9 million pounds more than the 1955 production. By 1975, Utah will need 167 million pounds of milk above 1955 production.

Farms are producing about 50 percent of all chickens consumed in the State. By 1975, an estimated 25 million pounds more chickens will be consumed than were produced in 1955. In 1955, 380 million eggs, or about 50 million pounds, were produced, and about 40 million pounds were consumed. Projected consumption is about 14 million pounds above production in 1955. The present production of turkeys will exceed consumption in the State for the next 20 years.

Apple production was not sufficient in 1955 to supply local markets. By 1975, total demand for apples will be twice the present production. Production of peaches and other fruits is about equal to total consumption, projected 1975.

As the leading State in the mountain area in the processing of vegetables and with the estimated increase in population during the next 20 years, the demand for canned goods from Utah should be favorable.

Estimated Food Needs for 1,500,000 People

Projected food consumption for a population of 1,500,000 is about 2.9 billion pounds (tables 6 and 11). This quantity is 974 million pounds, or 51 percent above total production and 96 percent above consumption in 1955.

Demand in 1975 for beef, pork, milk, chickens, eggs, apples, peaches, pears, and processed peas will exceed the 1955 production of these commodities. Fluid milk will be in shorter supply than any other commodity.

The spread between the 1975 total demand for some commodities and 1955 production of these commodities would likely be greater than these data show. The local market for many of these commodities covers, in addition to Utah, parts of Nevada, Idaho, and Wyoming. The commodities that have a local market wider than the State are fruits, eggs and vegetables, both fresh and processed. But demand on the local market is of minor importance for such commodities as wheat, potatoes, livestock and livestock products, and processed dairy products.

Food Production from Additional Water Supply

The estimated production of food from land that is to receive water from development of the Colorado River and Weber Basin Projects is about 289 million pounds (table 12). Of this total, 174 million pounds would come from land under the Central Utah and Emery projects, and 115 million pounds from land under the Weber Basin development program.

Table 12. Food production resulting from Colorado River Storage and Weber Basin Projects, Utah

Project	Area 1/ Acres	Increased food : production per : acre 2/ Pounds	Total production : 1,000 lbs.
Colorado River Storage Project:			
Adequate water supply - - - -	32,170	1,933	62,185
Supplemental supply - - - -	152,290	733	111,629
Total - - - - -	184,460	-----	173,814
Weber Basin Project:			
Adequate supply - - - - -	50,500	1,933	97,616
Supplemental supply - - - - -	24,388	733	17,876
Total - - - - -	74,888	-----	115,492
Grand total - - - - -	259,348	-----	289,306

1/ Data taken from table 3. p 9.

2/ Based on total pounds of food produced on irrigated land in Utah for 1955 (table 11). This was obtained by deducting the number of pounds of food produced on ranges and dryland including dryland wheat used for food, all meat from mutton and lambs, and half the meat from beef cattle produced.

Acres of irrigated land were based on total acres irrigated land of 1,165,000 with 407,000 adequately irrigated and 758,000 with a partial supply (table 2). Production of land with a partial supply was estimated at 60 percent of land with an adequate supply of 1,933 pounds. Thomas, W. P., et al. Colorado River and Utah's Agriculture. Utah Agr. Expt. Sta. Spec. Rept. No. 1, 1949.

The food produced on the authorized Federal projects of 289 million pounds and the 1955 production of 1,900 million pounds amount to 2.2 billion pounds, or 685 million pounds below the estimated needs of 2.9 billion pounds for a population of 1,500,000 (table 12).

Assuming that agricultural production will increase 15 percent from technological improvements during the next 20 years, food production on the irrigated land of the State, including land receiving water from new projects, will be about 2.5 billion pounds. This is about 400 million pounds under estimated needs for a population of 1,500,000.

Food Production and Consumption, Western States

Estimated food production in 1955 for the 11 Western States was about 71 billion pounds; for the same year, consumption was about 42.5 billion pounds (tables 5 and 13). Of all surplus commodities in 1955, fruits, vegetables, wheat and potatoes represented 97 percent. The deficit products of the western area were pork, dairy products, chickens, and eggs. During 1955 about 1.3 billion pounds more pork was consumed than was produced in the area. Consumption of dairy products exceeded production by about 1.3 billion pounds also.

For a projected population of 39 million people for the Western States, about 75 billion pounds of food will be required--about 4 billion pounds more than was produced in 1955 (table 13). Projected demand in the West for fruits, vegetables, wheat, and potatoes will be about 59 percent of the 1955 production. The estimated demand by 1975 of meat, dairy products, chickens, and eggs is about 19 billion pounds more than the 1955 production.

Production of meat, dairy products, chickens, and eggs is an important source of agricultural income in the West. An increase in population and demand for these products in this area will provide a local market for dairy products, poultry and poultry products, and meat that will meet grades in these markets. The West does not have sufficient feed grains to fatten all of the livestock produced in this area; as a result of the shortage of concentrated feeds, large numbers of feeder stock are moved to the Midwest for finishing. In turn, the West imports a large number of fat cattle.

If the projected population for the West is realized, demand for livestock and livestock products in this area will be greatly increased. The major increase in population and demand for food will be in California. Because of location and favorable transportation facilities, farmers in Utah will be in a favorable position to supply some of the agricultural products imported into the West Coast area.

Table 13. Production and consumption of farm products, 1955, and projected 1975 demand for food, 11 Western States

Commodity	: Production : : 1955 1/ :	Food requirements 2/		: Percentage : increase in : requirements
		: 1955 :	: 1975 :	
	Mil. lbs.	Mil. lbs.	Mil. lbs.	Pct.
Meats:				
Beef and veal - - - - -	2,974	2,100	3,666	74.6
Mutton and lamb - - - - -	346	214	363	69.6
Pork - - - - -	241	1,536	2,925	90.4
Total red meats 3/- - -	3,561	3,850	6,954	80.6
Chickens - - - - -	251	492	1,053	115.0
Turkeys - - - - -	229	115	203	76.5
Total poultry 4/- - - -	480	607	1,256	106.9
Total all meats - - -	4,041	4,457	8,210	84.2
Livestock products:				
Dairy products - - - - -	14,352	16,100	28,080	74.4
Eggs - - - - -	921	1,150	2,090	81.7
Total livestock prod. -	15,273	17,250	30,170	74.9
Total livestock & prod. - - - - -	19,314	21,707	38,380	76.8
Total fruit 5/- - - - -	11,958	4,577	9,263	102.4
Total vegetables - - - - -	13,995	4,763	9,360	96.5
Field crops:				
Wheat - - - - -	14,153	3,956	6,240	57.7
Potatoes - - - - -	7,987	2,323	3,315	42.7
Sugar - - - - -	2,682	2,215	3,627	63.7
Total field crops - - -	24,822	8,494	13,182	55.2
Total crop food - - -	50,775	17,834	31,805	78.3
Other food 6/ - - - - -	1,434	2,868	4,750	65.6
Grand total foods - - - -	71,523	42,409	74,935	76.7

1/ U. S. Dept. of Agriculture, Agricultural Statistics, 1956.

2/ Per capital consumption based on rates used for Utah, table 11.

Population for Western States, 23,185,000 in 1955 and 39,000,000 projected 1975, table 5.

3/ Carcass weight.

4/ Eviscerated weight.

5/ Fruits include apples, cherries, peaches, pears, apricots, prunes, oranges, grapefruit, lemons, grapes, and miscellaneous fruits equal to 10 percent of total fruit consumption for 1955.

6/ Production of other foods estimated at 50 percent of consumption for 1955, and includes other grain products, fats, oils, beans, rice, nuts, etc.

IMPACTS ON UTAH'S AGRICULTURE OF PROJECTED FOOD REQUIREMENTS

During the next 20 years, the outlook is for an expansion of industry and population in Utah, the Mountain States, and West Coast areas. If the projections of population and increased per capita consumption of food for these areas are realized, food requirements will increase by about 75 percent for the Western States. 8/ The shift in population to the West will greatly improve local markets for agricultural products. The increase in requirements for food in Utah and the West will vary widely between commodities. The impact of this new situation will affect use of agricultural resources, production and marketing programs, and the agricultural economy of the State.

Continued Pressure of Population Against the Land

Even with the development of Utah's agricultural land and water resources, pressure of population will continue against the land. This assumption is based on two things. (1) After development and use of the water available, the irrigated area will remain relatively small as related to the number of people. The projected irrigated area by 1975 is about 1,250,000 acres, or an increase of about 100,000 acres (table 3). Irrigated land per capita by 1975 will be about 40 percent less than in 1955. (2) Location, as related to a place to live and to markets and educational, cultural, and social opportunities, are factors in the demand for irrigated land. This latter factor is especially significant on the Wasatch Front where more than 80 percent of the rural population now lives and will continue to live after the water resources are developed.

Types of Farming in Utah

Three general types of farming have been followed in Utah--irrigated and dryland farming, and range livestock production. Irrigated farming will continue to be the major type. Expansion in agriculture is likely to lie in further intensification of irrigated farms.

Irrigated farming.-- Intensive farming will predominate on the more productive land with adequate water supplies. This assumption is based on several factors: (1) Small farms in areas of good land and adequate water require intensification of farming operations to support a farm family; (2) future development of land and water will be costly because the higher cost projects remain; (3) the large investment in land and capital will necessitate a larger farm, which frequently can be attained only by intensification; and (4) local and western markets will be expanded for intensive agricultural products. Intensive farming is encouraged when agricultural production is consumed largely in local or nearby markets. This location factor will probably be most favorable to production of dairy products. Other commodities for which the location factor will be favorable include poultry products, canning crops, fruit and truck crops, and some field crops.

8/ See footnote 1, Daly, R. F., page 1.

New agricultural production depends upon further development and more efficient use of irrigation water. An adequate water supply usually stimulates more efficient use of land and water.

Dry farming.- Development of dryland crop production is limited to areas in which climate and soils are favorable. Although there was some expansion in this enterprise during World War II years, when rainfall and prices were favorable, retrenchment of dryland crops during periods of less favorable climate and prices may be expected.

Range livestock production.- Feed resources on rangeland are limited, and expansion of range livestock production is not likely. More efficient livestock production can be obtained if rangeland is used in conjunction with irrigated farming.

Demand by Commodities

Both growth in population and change in rates of consumption will greatly affect the demand for various commodities. Changes in production to meet these demands will depend upon the ratio of present production to demand, on whether commodities are produced mainly for local markets, and on marketing costs of importing and exporting food product.

Dairy products.- Utah dairymen produced about 700 million pounds of milk in 1955 (table 14 and fig. 8). Based on a per capita consumption of 700 pounds, consumption of all dairy products in terms of milk equivalent amounted to 558 million pounds. About 21 million pounds of milk was fed to calves on farms, and about 118 million pounds was exported. The total number of dairy cows in 1955 was 112,000. About 101,000 were milked. The 11,000 dairy cows not milked included 2-year-old heifers and some dry cows. Production per cow milked was 6,900 pounds.

Based on a projected population for 1975 of 1,500,000, consumption of milk will be about a billion pounds; 1,200,000 people would require 864 million pounds (table 11). To provide this amount of milk plus the amount used on farms and a 10-percent surplus would require a total production of 1.2 billion pounds for 1,500,000 people, and about a billion pounds for a population of 1,200,000 (table 14). With the present production per cow, the larger population projection would require about 200,000 cows; for the lower population projection, 160,000 cows would be required. An average increased production per cow from 6,900 to 8,000 pounds would reduce the total number of cows required to 172,000 for the larger population estimate and to 138,000 for the lower population projection.

At a rate of 3.5 acres of irrigated land to feed a dairy cow including young stock, about 600,000 acres would be required to feed 172,000 cows and about 500,000 acres to feed 138,000 dairy cows. About 52 percent of the land now irrigated and 48 percent of the land probably irrigated by 1975 would be required for 172,000 cows (tables 3 and 14). Use of about half the irrigated land for production of feed for dairy cows would have a significant impact on agricultural production and farm organization in the State.

Table 14. Production and consumption of dairy products, 1955, and projected 1975, Utah ^{1/}

Item	Unit	1955	Projected 1975	Percentage increase 1955-1975
Population - - - - -	Thousands	797	1,500	88
Total production ^{2/} - - -	Million pounds	697	1,241	78
Consumption ^{3/} - - - - -	Million pounds	558	1,080	94
Fed to calves ^{2/} - - - - -	Million pounds	21	37	76
Exported - - - - -	Million pounds	118	124	5
Percentage grade-A ^{2/} - - -	Percent	57	75	32
Number total cows ^{2/} - - -	Thousands	112	172	54
Number cows milked ^{2/} - - -	Thousands	101	155	53
Milk production per cow:				
Average all cows ^{2/} - - -	Pounds	6,900	8,000	--
Grade-A cows ^{2/4/} - - - - -	Pounds	7,500	8,500	--
Grade-C cows ^{4/} - - - - -	Pounds	6,200	6,500	--
Total acres required to feed cows and young stock at 3.5 acres per cow unit - - - - -	Thousands	392	602	54

^{1/} Based on assumptions and projected population for Utah by 1975, table 6, page 24.

^{2/} U. S. Agricultural Marketing Service. Utah 1955 annual milk and dairy products report. (Mimeographed.) Projected number of cows for 1975 based on production per cow of 8,000 pounds.

^{3/} See table 11, footnotes 3 and 9.

^{4/} Marketing Grade-A Milk. Wyo. Agr. Expt. Sta. Bul. 342. June 1956. Western Regional Research Publication.

With increased milk production per cow, both per acre yields of feed crops and feed requirements will likely increase by 1975. From 1941-45 to 1951-55, the average per acre yield of alfalfa in Utah increased by about one-fourth of a ton. Projected milk production per cow for 1975 is 1,100 pounds above production for 1955. To produce 1,100 pounds additional milk per cow will require additional feed. However, an increase in production per acre will tend to offset an increase in feed requirements. Thus, it is assumed that the number of acres of irrigated land needed per dairy cow will be the same in 1975 as in 1955.

Expansion of the dairy industry in Utah will be largely to meet demands for grade-A fluid milk. Processed milk will be produced by small dairy enterprises or in marginal areas with less favorable markets. Processed milk, plus about 30 percent of the grade-A milk that is excess because of fluctuations in production over the year, will be used for processed dairy products. Probably, the processed dairy products needed during the next 20 years in excess of the amount obtained from small dairy herds and surplus grade-A milk will be imported. Processed dairy products are produced in areas with surplus feed. As Utah is not likely to have surplus dairy feeds, production of processed dairy products will be limited.

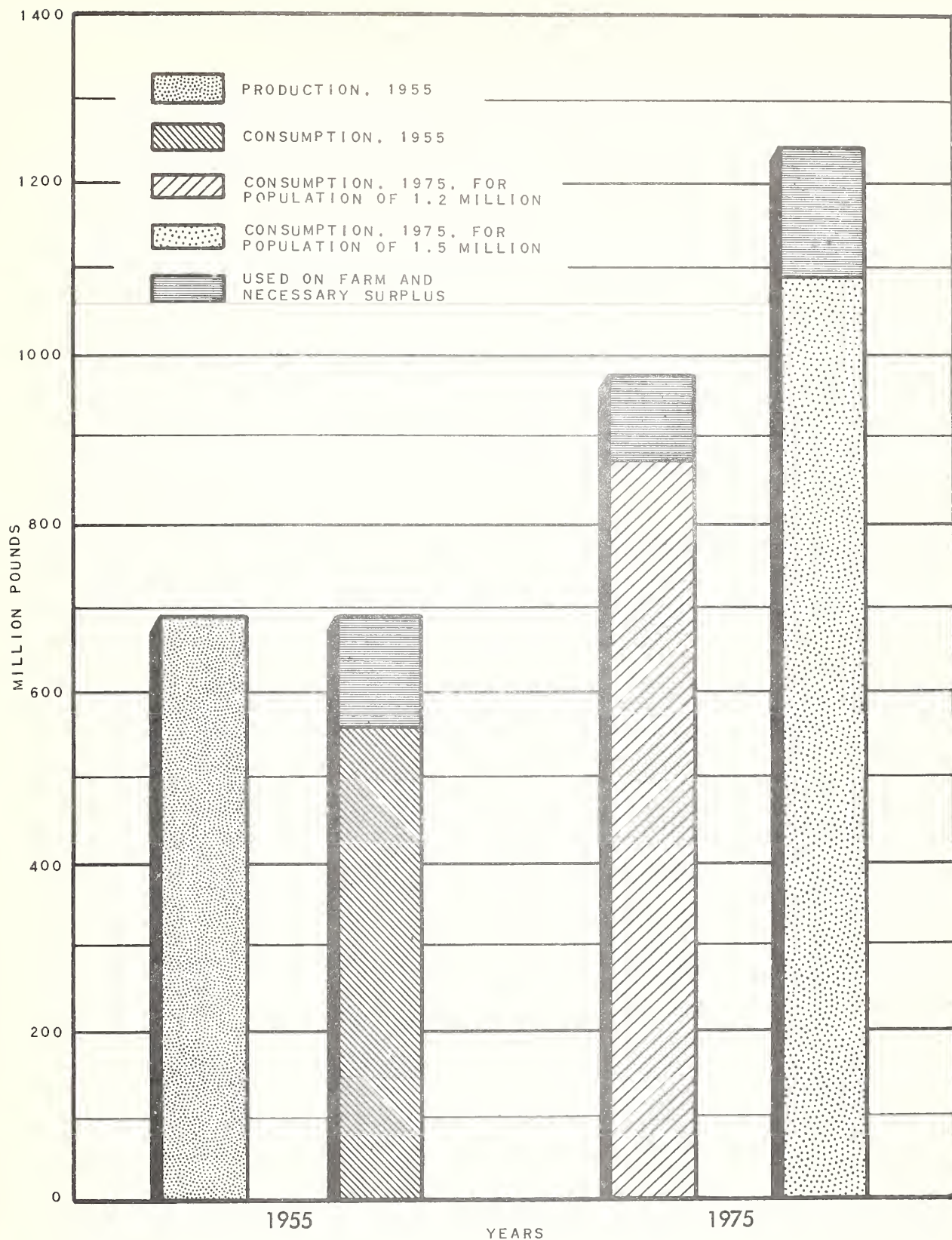


Fig. 8 Production and consumption of dairy products, 1955, and projected consumption for population of 1.2 and 1.5 million by 1975, Utah

Poultry.- Fifty million pounds of eggs were produced in the State in 1955, and 40 million pounds were consumed (table 11). At the projected 1975 level of 1,500,000 people, consumption of eggs will exceed 1955 production by 30 million pounds; for a population of 1,200,000, consumption will exceed 1955 production by 14 million pounds.

Surplus eggs are now exported to deficit areas in the Intermountain region and to West Coast markets. Apparently, California will continue to consume all surplus eggs produced in Utah.

Meat produced in 1955 from commercial broilers and farm chickens amounted to more than 7.4 million pounds eviscerated, dressed, or ready to cook (table 11). During the same year, consumption of chickens in Utah was 17 million pounds, or 9.7 million pounds more than was produced. It is apparent that producers in the State are not meeting competition from other broiler-producing areas. For a projected population of 1,500,000, consumption of chickens by 1975 will be about 40 million pounds, or 33 million pounds above current production.

About 3 million turkeys, or 35.5 million pounds eviscerated weight, were produced in 1955 (table 11). About 4 million pounds were consumed. By 1975, consumption of turkeys in Utah is expected to be about 8 million pounds. If production continues at about the 1955 level, the exportable surplus will be about 27 million pounds a year.

Poultry production is a major farm enterprise in Utah. Commercial production of poultry products in conjunction with other farm enterprises and on large specialized poultry farms will likely continue to be of considerable importance.

Beef cattle.- In 1955, beef production, including meat from beef, dairy cattle, and veal, amounted to about 112 million pounds (table 11), and consumption to about 73 million pounds. Feed is not available in the State to fatten many livestock; hence, cattle exports are primarily feeder cattle. The cattle finished in Utah are used locally or sold on West Coast markets.

For a population of 1,500,000 for 1975, the projected consumption is 141 million pounds, which is 29 million pounds above 1955 production. For a population of 1,200,000, consumption will be 112 million pounds.

Beef cattle will be produced largely on rangeland where cattle can use year-round grazing or where they are grazed for a part of the year and fed during the rest of the year. Beef cattle are likely to be raised on irrigated land where yields are low as a result of poor soils, shortage of irrigation water, or locations unfavorable for intensive farming.

Sheep.- Utah's rangelands are adapted to production of sheep. Most of the sheep use year-round grazing on winter, spring, fall, and summer rangelands. The State produces a large surplus of lambs for market. In 1955, production of lamb and mutton amounted to 32 million pounds and consumption to about 7 million pounds. A net of about 25 million pounds was exported to outside markets (table 11). The 1975 consumption for the State is expected to range between 11 million and 14 million pounds. Even with the expected large increase in population during the next 20 years, Utah will continue to export lamb and mutton.

Production of sheep on irrigated land usually cannot compete with intensive livestock and crop production. Additional irrigation water for new lands and for land now only partially irrigated would provide more feed for sheep in some areas to supplement the feed obtained from rangelands.

Pork.- In 1955, 8 million pounds of pork were produced in Utah; consumption for the same year was 53 million pounds (table 11). It is estimated that by 1975 consumption of pork will range from 90 to 112 million pounds. Based on the past history of pork production, this State will continue as a deficit area, and a continuation of past price differentials between local and midwestern markets may be expected. Even with a freight-rate advantage, production of pork has not expanded. Competition in pork production is from Midwestern States where feed grains are more abundant.

Sugar.- Sugar beets have been one of the principal cash crops grown on irrigated land. The growing of this crop, however, has been restricted largely to land with an adequate water supply. During recent years, acreage has been reduced because of competition from other crops and livestock on the small acreage with late water, withdrawal of a large acreage from production because of insects and plant diseases, and the high cost of labor.

Sugar beets have a high cash return per acre, and production of this crop fits into an intensive cropping program on irrigated land. With additional water for new and presently irrigated lands of the State and available allotments sugar beet production should increase.

Potatoes.- Utah farmers are now producing potatoes in surplus and likely will continue to do so during the next 20 years. The southern part of the State has a preference freight rate to Los Angeles and to Arizona markets over Idaho, the principal source of potatoes for these markets. Areas with favorable soils, climate, and water supply will be likely to increase potato production for local consumption and shipment to the southwestern markets.

Fruits.- Except for apples, production of fruit has exceeded local consumption. In 1955, consumption of apples in Utah was about 4 million pounds above average production from 1951 through 1955. Within the next 20 years, consumption of apples will likely be from 15 to 20 million pounds in excess of the 1955 production.

By 1975, consumption of all fruit, except apricots and cherries, probably will be above present production. Local fruit markets include most of Nevada, southern Idaho, Wyoming, and Utah. With increased population, the demand for fruit in these markets will be far in excess of the 1955 production.

Vegetables.- Utah is the leading canning State in the mountain area. A large expansion of population in California, Colorado, New Mexico, Arizona, and Utah has greatly changed the demand for processed vegetables produced in this State. The demand for processed vegetables in the Mountain region probably will increase proportionately with the increase in population during the next 20 years.

The four principal vegetables processed are tomatoes, peas, corn, and beans. In the past, the marketing of these products has been restricted mainly to the Intermountain and Great Plains areas. Rising freight rates since 1920

have diminished the marketing area for these products. However, recent growth in population in the mountain and western areas has created new demands for processed vegetables from Utah. An additional factor that has expanded markets for these products has been the movement to western markets by motor trucks. There are opportunities to market most of the peas, corn, and beans processed in this State in the mountain and south-western markets. California will consume any surplus products that may exist, except tomatoes. Tomatoes are marketed in the Mountain and Great Plains States as far south as Texas.

In the past, production of cash canning crops has been an important enterprise. Indications are that production of these crops will continue to be profitable on irrigated farms in Utah.

Wheat.- Utah produces wheat on irrigated and dryfarming lands. Its production on dryfarming lands has been successful in three main dryfarming areas. This crop has been profitable because of the relatively lower value of dryfarming lands, which encourages extensive farming, and the high prices for wheat. Although a large acreage of irrigated land is planted to wheat, this acreage will likely be reduced when water is available for lands for which the supply is limited.

SUMMARY

A population of 220 million for the United States has been projected for 1975. A redistribution of population and supporting industries has accompanied the economic growth of the Nation. Industry and population have shifted significantly to the Western States.

The total land now irrigated in Utah is 1,165,000 acres. About 400,000 acres, or 35 percent, have an adequate water supply, and 758,000 acres have a partial supply. It is estimated that by 1975 the acreage of newly irrigated land will increase by 80,000 to 100,000 acres. About 175,000 acres of presently irrigated land will receive additional water.

The Colorado River Storage Project was authorized by Congress and approved by the President in 1956. The act authorizes the construction of four storage project with hydroelectric power development of more than a million kilowatts capacity. The act also authorizes 11 participating irrigation projects that would deliver water to 366,360 acres of land.

Two projects of the 11 irrigation projects authorized--Central Utah and Emery County--are located in Utah. Water from these projects will irrigate 32,170 acres of nonirrigated land and will supply supplemental water to 152,290 acres of land, or a total of 184,460 acres. The Weber River Basin Project will supply water to 74,888 acres of land. Of this acreage, 50,500 acres are nonirrigated and 24,388 acres will receive a supplemental supply. A total of 259,348 acres will receive water from the Colorado and Weber Projects.

Until recently, many cities in Utah have been short of water. During years when precipitation was below normal, water for culinary and industrial use was greatly restricted. A guarantee of a firm water supply for industry

could not be given. This situation retarded expansion of operating companies. New industries needing water did not locate in Utah. The lack of water became a major factor in retarding the industrial and population growth of the State.

The enlarged demand for water during World War II period by the Federal Government for use in war plants and by private industries made the water-shortage problem more acute. Cities began programs to develop additional water from their own water resources. The Federal Government assisted by authorizing new reclamation projects and by greater sales of water from old and new projects to cities and communities. As a result of these programs, the larger cities of the State during recent years have been able to provide needed water.

The population of the 11 Western States increased from 14 million in 1940 to 23 million in 1955. A projection for 1975 for these States is 39 million. The population of the 8 Mountain States in 1955 was about 6 million. A projection is for 9.5 million by 1975. In 1955, Utah's population was 797,000 persons, and projections by 1975 range from 1,200,000 to 1,500,000 persons.

In 1957, capacity of electric plants operating and under construction in Utah was about 900,000 kilowatts. It is estimated that for a population of 1,500,000, this State will need more than 2,000,000 kilowatts of electric capacity. The State will likely depend on thermal plants for additional power for expansion of its economy after development of potential hydro-electric power resources.

During the period 1920-40, the number of people employed in agriculture, mining, and industry remained about constant, while population increased by about 100,000, or 22 percent. The lack of opportunities for an expanding population resulted in the backing up of rural people on the farms, unemployment in cities, and migration of large numbers of people from Utah to the Pacific Coast and other areas.

From 1940 to 1955, great expansion occurred in industrial production and employment. In 1940, the total labor force in Utah was 181,000 as compared with 278,000 in 1955, an increase of 54 percent. The number of industrial workers increased 89 percent. If the projected population for 1975 of 1.2 to 1.5 million is realized, the total labor force will number about 500,000 persons.

During the World War II and postwar years, Utah's economy not only expanded but shifted from predominant reliance on agriculture to industry. Of the total employment in the basic industries in 1940, 53 percent was in agriculture, 29 percent in manufacturing, and 18 percent in mining. However, by 1955 agriculture employed only 38 percent, manufacturing 44 percent, and mining 18 percent. The 1975 projected number of workers employed in basic industries is 59 percent in manufacturing, 24 percent in agriculture, and 17 percent in mining. The enlarged activity in recent years came about through a change from production and processing of agricultural products to the manufacturing of steel and chemicals, the refining of metals and oil, and the manufacturing of supplies, machinery, and equipment for industry and government.

From 1940 to 1955, incomes from agriculture, manufacturing, and mining increased by \$578 million. During this period, retail trade increased from \$171 million to \$842 million, and personal income increased from \$269 million to \$1.2 billion. Of these increases, about 114 percent was the result of price changes and 248 percent resulted from factors other than price. In 1940, the per capita income in Utah was \$487 as compared with \$1,553 in 1955. The projected income for 1975 is \$2,065 per capita.

Projected increases of industry and population will affect vitally agriculture in Utah. In 1955, Utah produced about 2 billion pounds of food and consumed about 1.5 billion pounds. Food consumption by a population of 1,200,000 would be around 2.3 billion pounds, or 57 percent above consumption for 1955. Food consumption for a population of 1,500,000 would be about 2.9 billion pounds, an increase of 96 percent above 1955 consumption and nearly 1 billion pounds more than all food produced in the State in 1955.

Assuming that agricultural production will increase by 15 percent from technological improvements during the next 20 years, food production on the irrigated land of the State, including land receiving water from new projects, will be about 2.5 billion pounds. This is about 400 million pounds under estimated needs for a population of 1,500,000.

By 1975, consumption of all meat is expected to exceed 1955 production. Beef production was about 112 million pounds in 1955, and consumption for the same year was 73 million pounds. The projected consumption for 1975 ranges from 112 to 141 million pounds.

In 1955, 32 million pounds of lamb and mutton were produced and about 7 million pounds were consumed. Consumption of lamb and mutton by 1975 is expected to equal about half of 1955 production.

Milk production was 697 million pounds in 1955. Based on a projected population of 1.5 billion, total milk needed will be 1.1 billion pounds. About 172,000 cows will be needed to produce this milk, or an increase of 60,000 cows. Feed production for 172,000 cows will require about 600,000 acres of land. This acreage would be more than half of the irrigated land in the State.

During 1955, 50 million pounds of eggs were produced in Utah. In the same year, 40 million pounds were consumed. By 1975, consumption of eggs will exceed the 1955 production.

In 1955, Utah produced 7.4 million pounds of chickens and consumed 17 million pounds. Projected consumption for 1975 is estimated to range between 25 and 35 million pounds above 1955 production.

Utah farmers produced 3 million turkeys in 1955, or 35 million pounds eviscerated weight. Only 4 million pounds were consumed. By 1975, between 7 million and 9 million pounds will likely be consumed.

Sugar beets have a high cash return per acre. With additional water for new and presently irrigated lands of the State, production of sugar beets probably will increase.

With the exception of apples, production of fruits exceeded local consumption in 1955. By 1975, consumption of all fruits except apricots and cherries will be above 1955 production.

Of the Mountain States, Utah is the major canning State. The market area for processed vegetables has also been in these States. The recent increase in population in this area has created additional demands for processed vegetables. The projected increase in population in the Mountain States for 1975 is 62 percent above 1955. This increase will provide an expanding market for Utah's canned goods.

The estimated food production in 1955 for the 11 Western States was about 71 billion pounds; in the same year, about 42.5 billion pounds of food were consumed. Fruits, vegetables, wheat, and potatoes represented 97 percent of all surplus commodities. The deficit products were pork, dairy products, chickens, and eggs. For a projected population for this area of 39 million by 1975, about 75 billion pounds of food will be required.

It is expected that by 1975 consumption of red meats in the West will increase by 81 percent. This is about 3.4 billion pounds above 1955 production. During the next 20 years, consumption of all livestock and livestock products will increase by 77 percent, or about 19 billion pounds more than 1955 production. In 1955, the West produced surplus quantities of fruits, vegetables, wheat, and potatoes. Even with increased requirements estimated for 1975 of 78 percent, consumption of these commodities will still be less than 1955 production.

With expansion of population in Utah and the West, the State's agricultural products will be consumed largely in these areas. Expansion of local and western markets for meat, dairy products, processed vegetables, fruits, truck crops, and poultry products will be important to production of these commodities in Utah. The increase in demand in western markets for livestock and poultry products, processed vegetables, and potatoes will benefit both the agricultural and the total economy of the State.

The expected increased demand for agricultural commodities in Utah does not mean, of course, that these commodities will necessarily be produced in the State. Some enterprises have distinct income advantages on irrigated farms in Utah. Limited opportunities exist for expanded production of other commodities. Much food will be shipped both into and outside the States. But the analysis does suggest desirable directions of adjustment and production for the use of additional irrigation water in the State.

REFERENCES

- (1) Barton, G. T., and Rogers, R. O.
1956. Farm Output: Past changes and projected needs. U. S. Dept. Agr. Agr. Inform. Bul. 162. (Mimeographed.)
- (2) Committee on Interior and Insular Affairs. Colorado River Storage Senate Rep. 500. 84th Congress.
- (3) Daly, R. F.
1956. The Long-run demand for farm products. Agr. Econ. Res. 8:73-91.
- (4) Doty, H. O.
1956. The distribution of lamb and mutton for consumption in the United States. U. S. Dept. Agr. AMS-93. (Mimeographed.)
- (5) Federal Power Commission Regional Office, San Francisco, Calif.
1947. Letter.
- (6) Fuhrman, W. U., Blanch, G. T., and Stewart, C. E.
1952. An Economic analysis of the agricultural potentials of the Weber Basin Reclamation Project, Utah. Utah Agr. Expt. Sta. Rept. No. 7.
- (7) Harline, O. L.; and Sargent, R. L. Utah Economic and Business
1958. Bureau of Economic and Business Research, University of Utah. Vol. 17, No. 12 and Vol. 18, No. 1.
- (8) Industrial Commission of Utah.
1955. Annual Report.
- (9) Lamborn, E. W., and Anderson, R. H.
1952. Consumer demand for fruit, Salt Lake City, Utah 1948-49. Utah Agr. Expt. Sta. Bul. 356.
- (10) Marketing Grade-A Milk. Western Regional Research Publication.
1956. Wyo. Agr. Expt. Sta. Bul. 342.
- (11) Nielson, Elroy.
1956. Utah Economic Patterns, Univ. of Utah Press.
- (12) Nielson, H. C.
1955. Population trends in the United States through 1975. Stanford Research Institute.
- (13) Rees, I. J.
1957. Colorado River Power Market Survey. Federal Power Commission, San Francisco, Calif. In proceedings of conference of Pacific Southwest Interagency Committee held at Grand Junction, Colo., September 25, 1957. (Mimeographed.)

- (14) Thomas, W. P., and Blanch, G. T.
1936. Drainage and irrigation, soil, economic, and social conditions, Delta area, Utah. Division 3: Economic conditions. Utah Agr. Expt. Sta. Bul. 273.
- (15) Thomas, W. P., et al.
1949 The Colorado River and Utah's Agriculture. Utah Agr. Expt. Sta. Spec. Rept. No. 1.
- (16) Upper Colorado River Commission. Colorado River Storage Project.
1957.
- (17) United States Agricultural Marketing Service.
1956. Agricultural Statistics, 1955. Washington, D. C.
- (18) United States Agricultural Marketing Service.
1956. The farm income situation, September.
- (19) United States Agricultural Marketing Service.
1955. Utah annual milk and dairy products report. (Mimeographed.)
- (20) United States Department of Agriculture.
1955 Consumption of food in the United States, 1909-52. U. S. Dept. Agr. Agr. Handbook 62.
- (21) United States Department of Agriculture.
1956 Statistical data and notes on the long-run demand for farm products. Working data. (Processed.)
- (22) United States Bureau of the Census.
1940, 1950, and 1955. Population reports.
- (23) United States Bureau of the Census. Series P-25, No. 145.
- (24) United States Bureau of the Census.
1956. Retail trade. Census of Business.
- (25) United States Bureau of the Census.
1957. Current population reports: Population estimates. Series P-25, No. 160.
- (26) United States Census Reports.
1955.
- (27) United States Department of Commerce.
1955 and 1956. Survey of Current Business.
- (28) Utah Agr. Expt. Sta. unpublished reports.

